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May 5, 2020

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Stefanie A. Brand, Director
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Re: In the Matter of an Audit of the Affiliated Transactions between Atlantic City Electric Company, Pepco Holdings LLC, Exelon Inc. and Affiliates Including a Review of Operational and Financial Performance of Atlantic City Electric Company Pursuant to N.J.S.A. 48:3-49, 48:3-55, 48:3-56, 48:3-58 & N.J.A.C. 14:4-3.7(e) and (f) and a Comprehensive Management Audit of Atlantic City Electric Company Pursuant to N.J.S.A. 48:2-16.4 & N.J.A.C. 14:3-12.1 et seq.
Docket No. EA17030297

Dear Ms. Hall and Ms. Brand:

At its May 5, 2020 Agenda meeting, the New Jersey Board of Public Utilities ("Board") voted to accept "for filing purposes only" The Liberty Consulting Groups Audit Report ("Audit Report") in the above referenced matter. The Board also approved the release of the Audit Report to the public. The Board determined that comments on the report should be filed with the Board and the Division of Audits by June 5, 2020.

If you have any questions, please contact Alice Bator at (609) 292-0626.

Sincerely,

Aida Camacho-Welch

Aida Camacho-Welch
Secretary of the Board

ACW/AB/PS
Encl. (s)

Final Report
Audit of the Affiliated Transactions and Operational and Financial Performance and a Management Audit of Atlantic City Electric Company
Public Version: Confidential Materials are Redacted

Presented To:

Board of Public Utilities
State of New Jersey

Presented By:

The
Liberty Consulting Group

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October 2, 2019

Table of Contents

Chapter I: Introduction

A. Background

The Liberty Consulting Group (Liberty) conducted on behalf of the New Jersey Board of Public Utilities (Board or BPU), an audit of Atlantic City Electric Company (ACE). The audit was consisted of two phases:

- Phase One: an audit of the affiliated transactions between ACE, Pepco Holdings LLC (PHI), Exelon Inc. (Exelon), and its affiliates; and a review of ACE's financial performance and operational performance. This Phase of the audit was broadly scoped to consider a wide variety of focus areas pertinent to recent developments and current and developing circumstances at ACE.
- Phase Two consisted of a comprehensive management audit of ACE that addressed topic areas corresponding to functions traditionally examined in the Board's long-standing audit program.

A principal source of change for ACE came with the acquisition (completed in March 2016) of its parent PHI by Exelon in 2016. ACE serves about 545,000 New Jersey residential and commercial customers, representing a sizeable portion of PHI's utility operations that extended to mid-Atlantic utilities, Delmarva and Pepco. The acquisition by Exelon added a significant number of regulated utility affiliates, extending from the mid-Atlantic region to the Chicago metropolitan area. The Exelon distribution utilities serve some 10 million customers. The combined holding companies also have a very strong competitive market presence, with over 30,000 megawatts of generating capacity at Exelon Generation (including but not limited to the PJM region) and with 2.5 million customers who have chosen Constellation as a competitive energy supplier throughout the mid-Atlantic and in other regions of the country.

We completed audit field work in 2019, which included 1,295 data requests to which management responded and approximately 160 interviews with ACE, PHI, and Exelon personnel. Liberty provided draft reports for the BPU Staff to review and subsequently provided the drafts to the Company for a review for factual accuracy and to identify items in the report which management deemed confidential. Liberty considered Staff and Company comments on the draft reports before issuing this final report.

Liberty appreciated the opportunity to provide this service for the BPU and commends the BPU Staff for their interest and support throughout the audit. Liberty also thanks Company personnel for their cooperation during the course of the audit.

B. Structure of This Report

This report combines the chapters which detail Liberty's audit findings, conclusions, and recommendations in each of the Phase One and Phase Two audit areas. We include a full list of each of our recommendations below in Section C of this chapter.

The structure of this report follows:

- Chapter I: Introduction:

- Phase One:
  - Chapter II: Evaluation of ACE Financial Performance
  - Chapter III: Power Supply and Market Conditions
  - Chapter IV: Cost Allocation Methods
  - Chapter V: Capital Allocation
  - Chapter VI: Focused Operations Review
  - Chapter VII: EDECA
  - Chapter VIII: Merger Conditions
- Phase Two:
  - Chapter IX: Executive Management and Governance
  - Chapter X: Human Resources
  - Chapter XI: Staffing and Compensation
  - Chapter XII: Strategic Planning
  - Chapter XIII: Finance and Cash Management
  - Chapter XIV: Accounting and Property Records
  - Chapter XV: Customer Service
  - Chapter XVI: External Relations
  - Chapter XVII: Distributions and Operations Management
  - Chapter XVIII: Cyber Security and System Vulnerability
  - Chapter XIX: Clean Energy
  - Chapter XX: Contractor Performance - - Mark-Outs and Services
  - Chapter XXI Support Services.

C. Summary of Audit Recommendations

Chapter II: Evaluation of ACE Financial Performance

Chapter II presents the results of our assembly and categorization of information and our analysis of the causes and their contributions to ACE financial performance.

Chapter III: Power Supply and Market Conditions

1. Re-engage in efforts to negotiate the mitigation of above-market NUG contracts.
2. Provide a regular report to the NJBPU on PJM issues on which ACE is an internal Exelon stakeholder.
3. Expand representation by ACE representatives on key PJM committees.

Chapter IV: Cost Allocation Methods

1. Update the EBSCo CAM to provide more complete information about allocation methods and procedures.
2. Reconcile the differences between the PHI and Exelon cost allocation schemes to create a uniform method for allocating costs to ACE from all affiliates.
3. Undertake focused efforts to make clear that management's stated priority on direct charging sufficiently impels employees to do so.

4. Investigate the reasons for the excessive use of the general allocator in assigning service company costs to ACE and examine and implement means for reducing the use of general allocators through direct charging or using appropriate cost-causative allocators.
5. Eliminate default time charging from the Exelon employee time entry system and replace it with a positive time reporting process.

Chapter V: Capital Allocation

1. Revisit ACE capital investment plans after examining and producing a consensus on reliability aspirations and targets.

Chapter VI: Focused Operations Review

1. Provide a thorough, robust identification of the benefits of AMI, assess roll-out and sustaining costs in detail, value AMI's reliability benefits carefully, and offer detailed estimates of roll-out costs under a range of scenarios.
2. Prepare comprehensive, documented plans for restoring feeders in cases of total substation outages.
3. Recalculate the basis for dollar-valuing reliability improvements and rethink the Reliability Improvement Plan's elements and expenditures.
4. Closely monitor momentary outage data and proactively address any repeat-outage performance drops from 2017 levels.
5. Promptly complete investigations of crushed-stone condition and nitrogen pressure readings at substations.
6. Accelerate the replacement of rejected wood poles and ensure timely, accurate removal tracking.
7. Bring underground residential development cable work into closer conformity to management's 28-day repair/replace window.
8. Incorporate enhanced vegetation management activities into analyses and processes covered by Recommendation #3 above.
9. Include the Staging Area and the Crew Leader and Daily Checklists in the Emergency Operations Plan, and amend the Crew Leader Checklist to incorporate inspections and verification requirements that should occur prior to re-energizing feeder sections.
10. Update the Customer Care Storm Emergency Response Plan to reflect recent changes to key supporting technologies and outage communications strategies.
11. Examine and implement means for improving distribution load forecasting.

Chapter VII: EDECA

1. Treat each affiliate offering services at retail, including those potentially excluded by management's interpretation regarding the provision of services to other utilities, common

carriers, specialty services, a relatively limited number of customers, or telecommunications services, as an RCBS.

2. Make additional portions of the Standards subject to Internal Audit review.
3. Update the Compliance Plan to include which individuals or departments have responsibility for enforcement of each section of the Standards.
4. Ensure that all customer communications, including print, radio, television, and web advertisements are maintained sufficiently to support reviews of compliance with the Standards.
5. Ensure that website disclaimers regarding the taking of service from an affiliate are included on each Retail Affiliate's site, and are presented in a way that will help ensure that customers will notice.
6. The Compliance Plan should explicitly address Section 14:4-3.3(j) of the Standards.
7. Management should change its interpretation of Section 14:4-3.4(a) and Section 14:4-3.4(b) of the Standards regarding contractual relationships and their impact on disclosure requirements.
8. Management should ensure that all supplier lists are maintained in alphabetical order per Section 14:4-3.4(c) of the Standards.
9. Reposition the duties of the individuals who serve as an Officer for ACE and Exelon Corporation and ACE, Exelon Corporation, and an RCBS.
10. Revise the Compliance Plan such that it properly interprets Section 14:4-3.5(q) of the Standards.
11. Require Board approval for future actions regarding any modification, extension, changes in pricing terms, or types or levels of services for the services provided by MAS, and include in them analysis demonstrating how such actions comply with Section 14:4-3.5(t)2 and 14:4-3.5(t)6 of the Standards.
12. Continue soliciting market information and make subsequent pricing adjustments to ensure that ACE's Mays Landing lease complies with Section 14:4-3.5(u) of the Standards
13. Make explicit the Compliance Plan's inclusion of intellectual property in asset transfer provisions and provide a sufficient explanation of what is covered to put all employees on notice of the types of intangible property that is covered.

Chapter VIII: Merger Conditions

1. Engage stakeholders in a discussion of the practical application of Stipulation of Settlement Commitment No. 27, under which Exelon has consented to BPU jurisdiction, should uncertainty about its intent exist among them.
2. Make explicit in the LLC Agreement the inability to alter (even with unanimous director and Golden Share Holder consent) Section X, Section 5.2.8, and any other provisions giving effect to the ring-fencing provisions of the merger commitments.

3. Change the SPE Operating Agreement to require independent director and Golden Share Holder approval of changes material to the Commitments' ring-fencing protections.
4. Amend the language of Section 2.8 of the SPE Operating Agreement to prevent a loss of EEDC direct ownership of 100 percent of the SPE from any circumstances, including but not limited to alienation or pledging of membership units for the benefit of creditors.
5. Amend Clause (ii) of Section 1.10(a)(4) of the Operating Agreement of the SPE to expand the definition of "Independent Director" so as to expressly preclude service by current or former officers of any Exelon entity as an SPE independent director
6. Establish a working group to discuss and seek consensus on the standards, interests, and other parameters that should guide Golden Share Holder decisions in matters requiring its assent or concurrence.
7. Amend the relevant governing documents and create controls designed to preclude material economic or financial interests by all entities and individuals associated with Golden Share holding.)
8. Amend the documents governing PHI LLC board membership to limit membership to seven, at least four of whom must be independent and bar the ability to change these characteristics without BPU approval.
9. Eliminate the power to abolish the requirement that the Golden Share Holder consent to voluntary SPE or PHI bankruptcy filings.
10. Develop and monitor specific plans for increasing the pace of Quick Home Energy customer-facing activities.
11. Provide a better-directed web experience for customers seeking energy efficiency and demand-response programs and develop a rapid-response capability to scale the organizations who will have substantial responsibility for implementing requirements and programs and meeting expectations created by recent New Jersey legislation.
12. See the Recommendations section of Chapter IV.
13. Enable the power to opt out of EBSC services by providing a clear and appropriately scoped list of permitted opt-out areas.
14. Establish an approach and means at the Exelon level to expedite the delivery of information: (a) directly subject to Commitment No. 88, and (b) relevant to meeting the broader needs of BPU-commissioned activities, such as this audit.
15. Provide for cyclical reporting of compliance with ring fencing and other requirements.
16. Remove "consistent with the requirements of the Order" from the required Exelon officer certifications and add to the certification a statement that Exelon "has maintained" separation.
17. Establish and conduct a regular process for examining, tracking, and reporting of compliance with merger commitments to the BPU.

Chapter IX: Executive Management and Governance

1. Expand the numbers of Exelon and PHI LLC board meetings and include regular sessions bringing both together.
2. PHI LLC board membership of seven, with representation from the four jurisdictions involved needs to remain a central element of the governance structure.
3. Make clear that new PHI LLC independent directors shall be subject to restriction on economic interests beyond those nominally compliant with exchange listing-requirements.
4. Document more clearly the role of the PHI LLC board with respect to oversight activities.
5. Provide the PHI LLC board should receive regular updates regarding Exelon's operations and financial condition, and regularly examine Exelon financial distress scenarios.
6. Restore the ACE-only President position.

Chapter X: Human Resources

We have no recommendations in the area of Human Resources; please see the recommendation included in Chapter XI which relates to this task area.

Chapter XI: Staffing and Compensation

1. Promptly complete the work needed to provide strongly founded resources plans for PHISCo and EBSCo and provide resource alignment, numbers, and costs based upon realistically achievable efficiency gains.
2. Conduct a comprehensive review of benefit levels and apply the results to assess competitiveness of combined compensation and benefits values.

Chapter XII: Strategic Planning

We have no recommendations in the area of Strategic Planning.

Chapter XIII: Finance and Cash Management

1. Prioritize improving ACE credit ratings at Moody's and Fitch.
2. Verify the continuation of language that does not implicate ACE assets or operations in future financing documents.

Chapter XIV: Accounting and Property Records

1. Review the execution of non-rate-related revenue accounting procedures to ensure the availability of supporting documentation and correct classification.

Chapter XV: Customer Service

1. Continue complaint root cause efforts to reduce complaints and to improve the customer experience of customers who are challenged to pay their accounts.
2. Promote paperless billing to increase participation and reduce billing costs.

Chapter XVI: External Relations

1. Restore the ACE-only President position.
2. Develop a program for regular outreach with the BPU and with New Jersey stakeholders

Chapter XVII: Distributions and Operations Management

1. Conduct an analysis of the causes of estimated-to-actual cost variances on projects experiencing significant variances and validate the ability of the new estimating tool to address them.

Chapter XVIII: Cyber Security and System Vulnerability

1. Develop a two-phased, 10-year staffing and development plan for cyber security resources.
2. CISS should launch an initiative to design and implement meaningful, actionable metrics for management to review on a regular basis.
3. Provide for regular external examinations of cybersecurity.

Chapter XIX: Clean Energy

We have no recommendations with respect to Clean Energy, given the reported closing out of the Residential Controllable Smart Thermostat program.

Chapter XX: Contractor Performance - - Mark-Outs and Services

1. Develop and execute measures to continue expansion of third-party use of the New Jersey One Call notification system, emphasizing communications with contractors and customers.
2. Extend the tracking of contractor distribution work completion to additional work to underground, secondary, and service-drop to which contractors regularly and materially contribute.

Chapter XXI: Support Services.

We have no recommendations with respect to Support Services.

Chapter II: Evaluation of ACE Financial Performance Table of Contents

Chapter II: Evaluation of ACE Financial Performance

A. Chapter Summary

We conducted a detailed evaluation of ACE financial performance, focusing on its inability to earn its authorized rates of return over the 10-year period from 2008 through 2017. We sought first to determine the factors affecting ACE's overall financial performance, its inability to earn close to its allowed return, and its comparatively frequent filings seeking base rate increases. We sought next to assess the contributions that those factors have made to under-earnings overall and as the ten years progressed. This chapter presents the results of our assembly and categorization of information and our analysis of the causes and their contributions to ACE financial performance.

Our examination found total under-earnings, relative to allowed returns of about $285 million. Two contributors accounted for about nine-tenths of this amount.

First, ACE's actually-incurred O&M expenses in excess of those included in test years used for rate setting comprised the greatest single cause of the 10-year under-earnings, as ACE routinely spent more than those amounts. The difference accounts for earnings deficiencies of $136 million - - 48 percent of the $285 million total. ACE rate changes across the ten years we examined have resulted from settlements. The underlying rate settlements do not specify specific O&M amounts built into the settlements. Given the inability to identify the amounts of O&M expenses incorporated into revenue requirements by rate settlements, we found it reasonable to use the difference between test period levels and actual amounts as a proxy for the effect of ACE's O&M expenditure growth on earnings. Even if it is reasonable to conclude that those settlements incorporated some effective "disallowance" of test-year O&M, actual annual expenditures well exceeded test-period and ACE's requested amounts.

Second, we found ACE capital expenditures (CAPEX) incurred but not yet included in rate base directly discernible, and another direct cause of ACE earnings shortfalls. CAPEX contributed an additional $125 million, or 44 percent, to ACE under-earnings for the 10 years. Again, ACE rate changes across the ten years we examined have resulted from settlements. While rate settlements did not identify each "accepted" or "agreed" element of revenue requirements, they did support a direct identification of rate base, allowing for a reasonably clear identification of the large contribution of CAPEX to under-earnings.

We calculated a third, much smaller category of "Other" causes to ACE under-earnings, accounting for about $55 million over the 10 years. This category addresses under-earning whose causes are less defined due to the lack of specificity in ACE rate settlements. One probable contributor to the "Other" category is the long-standing application of a Consolidated Tax Adjustment (CTA) factor in setting rates. The CTA serves to share with customers savings produced when utility holding companies consolidate federal income tax filings. Such filings can reduce the total tax burden by offsetting positive taxable income of utility operating companies with negative taxable income from unregulated affiliates. We note that while any CTA amounts decrease ACE earnings, they are offset by increases in the consolidated tax benefits that drive their calculation.

The combination of these three factors exceeds the 10-year total of $285 million in ACE under-earnings. A fourth factor, the net effect of changes in sales and revenues and other taxes proved earnings-positive, by about $32 million over 10 years. Like CAPEX, the rate settlements that drove rates for the 10 years we studied were reasonably clear in identifying amounts associated with these factors. Therefore, this $32 million calculation did not require the broader estimation approach we had to apply to the O&M and Other categories.

We believe that our work in addressing the four categories discussed above (O&M expenses, CAPEX, Other including the CTA, and Sales/Revenues/Other Taxes) provides a reliable and reasonably accurate depiction of the nature and magnitudes of the principal contributors to ACE under-earnings from 2008 through 2017. O&M and capital cost growth proved the dominant causes.

B. Background

The Request for Proposals called for an examination and assessment of financial information for 2008 through 2017. We conducted that examination and we assessed the financial performance of ACE's distribution business and its inability to earn returns reasonably close to allowed rates of return despite frequent base rate increase requests. The other chapters of this report discuss the findings, conclusions, and recommendations resulting from our broad review. We undertook that broad review in parallel with the examination and assessment described in this chapter. That companion review has informed what we found and what we report here.

The review and evaluation reported here resulted from a structured effort focused on studying and evaluating earnings shortfalls associated with regulated utility operations. We began by determining and plotting the magnitude and general causes of yearly shortfalls from 2008 through 2017. We then performed focused evaluations of the causes of shortfalls identified.

Our year-by-year review of financial statements (beginning with 2008) formed a backbone element of our assessment. We first identified and considered material components affecting financial performance at electric utilities generally. We then considered internal ACE and holding company factors, and took account of the impacts of significant expenditures incurred to address reliability performance. Our initial review verified the following overall categories as principal earnings drivers:

- Sales and Revenue
- Capital Expenditures (CAPEX levels, timing, rate-base impacts, financing)
- Capital structure (ACE stand-alone)
  - Debt (*e.g.*, long and short-term interest)
  - Depreciation and amortization, and calculations
  - Taxes (*e.g.*, income taxes, property taxes, other taxes)
  - Dividends and other distributions
  - Equity (*e.g.*, retained earnings and equity levels)
- O&M Expenses
- Other, including the Consolidated Tax Adjustment.

Our review and assessment took place through activities structured according to three major work tasks:

- *ACE Financial Performance Evaluation*: Identify, evaluate, and determine causation for ACE financial performance and earnings shortfalls from rate authorized levels for 2008 – 2017
- *Planning and ACE Performance*: Examine PHI and Exelon plans and goals for potential impacts on ACE earnings shortfalls
- *ACE CAPEX and OPEX*: Evaluate ACE capital expenditures, financing, and operating expenditure drivers.

We began our review by identifying, determining, and plotting the magnitude of the shortfalls in each designated year from 2008 through 2017. Year-by-year reviews of ACE financial performance beginning with 2008 formed a backbone element of the work in this area. That review specifically addressed the key components affecting financial performance. Major determinants such as capital expenditures and rate base, taxes, financing costs, sales, and unplanned storm and O&M costs formed principal focuses of our work.

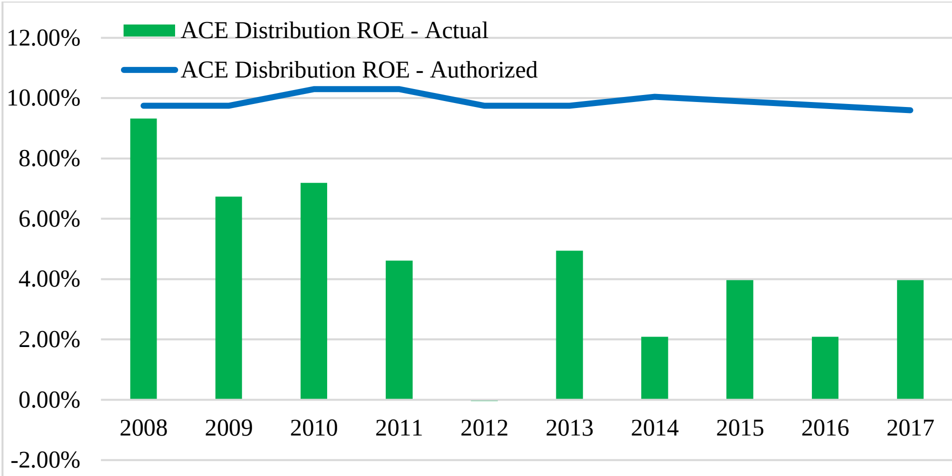
We then performed focused evaluations of the root causes of earnings deficiencies whose composition and contributors we identified. We worked with ACE to structure and to review extensive analysis of the causes of earnings deficiencies related to CAPEX, O&M expenses, and other causes, including the CTA and other taxes. We prepared a detailed analysis for each of the ten years, providing a comprehensive view and evaluation of the financial results for that year. We aggregated the results of the individual years to facilitate analysis of trends and the earnings deficiency primary causation factors. We concluded by forming overall results, findings, and conclusions about the causes and determining factors and the magnitudes of their contributions to ACE earnings shortfalls.

C. Findings

1. Overview of 2008-2017 ACE Returns on Equity

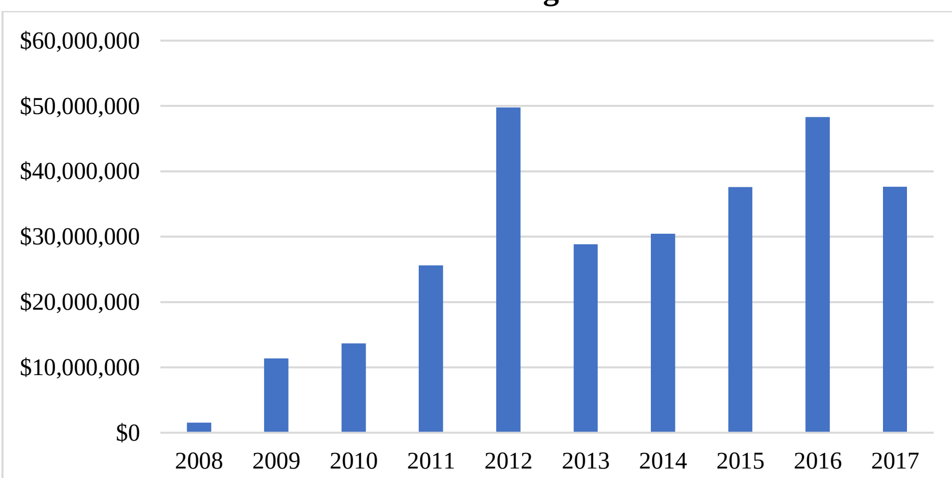
ACE's actual Return on Equity (ROE) fell well below BPU-authorized levels in every year since 2009. The company experienced consistent and substantial earnings shortfalls in each of the last nine years. The following chart shows that ACE earned less than a 5 percent return on equity in each year from 2011 through 2017.

Actual vs. Authorized ACE Distribution Return on Equity



The next chart shows the dollar level of earnings deficiencies (amounts below authorized levels) for each of the last 10 years. The deficiencies have exceeded $25 million in each year from 2011 through 2017, reaching almost $50 million in 2012 and 2016. Total earnings deficiencies over the ten years were about $285 million, or $28.5 million per year, on average. We sought to determine the major causes of the ACE earnings deficiencies.

ACE 2008-2017 Earnings Deficiencies



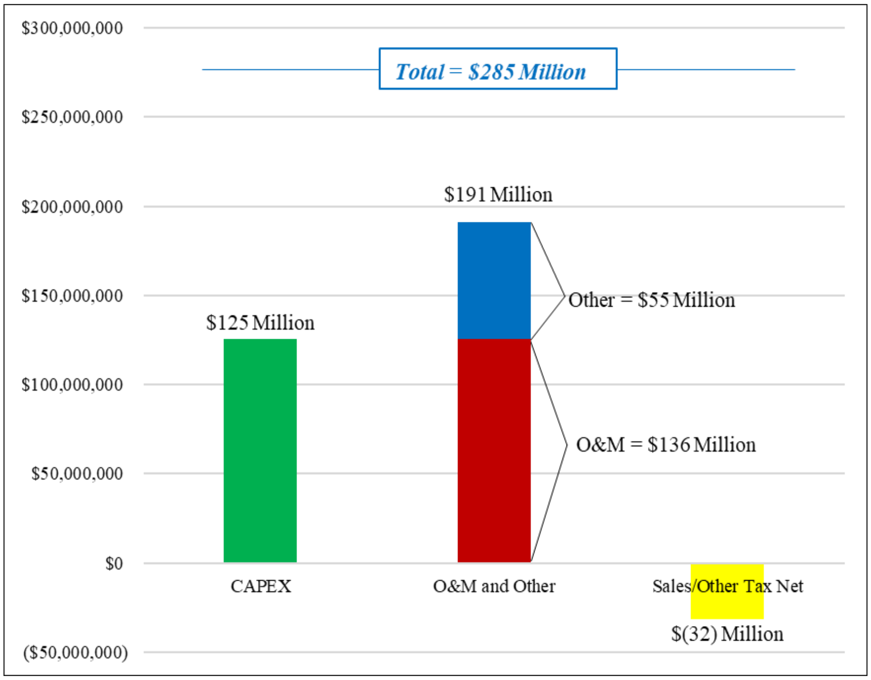
2. 2008-2017 Earnings Deficiency Contributors

Our baseline work led us to a division of causation factors into major categories:

- O&M Expenses
- CAPEX Related
- Oher, including CTA
- Revenue/Sales/Other Taxes.

We determined the contribution of each of the major causation categories to 2008-2017 earnings deficiencies of $285 million. The next chart provides that categorization at a high level. The chart shows CAPEX and O&M Expense as the dominant contributors, with Other accounting for the bulk of the remainder, offset in part by the positive contribution to earnings from the Revenue/Sales/Other Taxes category.

10-Year Earnings Deficiency Factors



a. <u>O&M Expenses</u>

The largest contributor to earnings deficiencies came from a high-level category that we originally termed "O&M Expenses and Other." We initially combined these two elements into a single category, because rate settlements have not separately identified the amounts in these areas incorporated into revenue requirements used to set rates. We did, however, and as discussed below, eventually find an acceptable means for estimating and separating them. Over the 10-year period, the combination of O&M Expense and Other accounted for 67 percent of total ACE earnings deficiencies ($191 million of the $285 million total value). The impact of this combined category moderated somewhat over the second half of the 10 years, falling to about 49 percent for 2013 through 2017. This chapter later describes the results of our more detailed analysis of O&M expense dollars spent by ACE above the levels included in rate test years. We found the O&M gap to account for about $136 million of the $285 million in 10-year earnings deficiencies (about 48 percent of the total). That detailed analysis identified increased expenditures on O&M expenses as the largest single cause of earnings deficiencies over the 2008-2017 period.

After breaking this combined category into two components, we worked with a category we initially defined as the Other component, shown in the preceding chart. We formed that separate category by removing O&M from the total. This category accounted for about $55 million over the ten years - - about 19 percent of the total deficiencies. We later undertook more detailed examination of the impacts of the CTA, concluding that it could account for most or all of the $55 million. However, given the lack of detail in the settlement agreements forming the bases for rates, the accuracy of any such estimates are unknown.

b. CAPEX-Related

The CAPEX category captures earnings deficiency results arising from those portions of ACE capital investments made to support utility service but not yet included in rate base used to set customer rates. In essence, these "excess" amounts reflect dollars actually spent but pending review in the next ensuing rate case filing. We calculated the amounts using the rate settlements in place as the 10 years we studied progressed. Until included in rate base, such capital investments do not produce recovery of financing costs, return on equity capital, income taxes and capital recovery (depreciation). This primary driver of ACE financial performance caused 44 percent ($125 million) of the total $285 million in earnings deficiencies from 2008 through 2017. The negative earnings impact of the CAPEX category moderated somewhat during the second half of the 10-year period study, accounting for about 39 percent of the earnings deficiencies from 2013-2017.

c. Revenue/Sales/Other Taxes

Revenue/Sales/Other Taxes comprised our third major category. One generally finds that increases in electric sales following base rate re-sets mitigate the earnings attrition that CAPEX, O&M expense increases, and other factors tend to cause. Such growth did provide such an offset for ACE from 2008-2011, during which sales and revenue increased. This trend reversed in 2012-2017, with sales declining due to regional economic conditions and casino closings. We did find, however, that dollars in the "Transitional Energy Facility Assessment (TEFA) Other Tax" category substantially offset such earnings deficiencies produced by revenue losses after sales declines began.

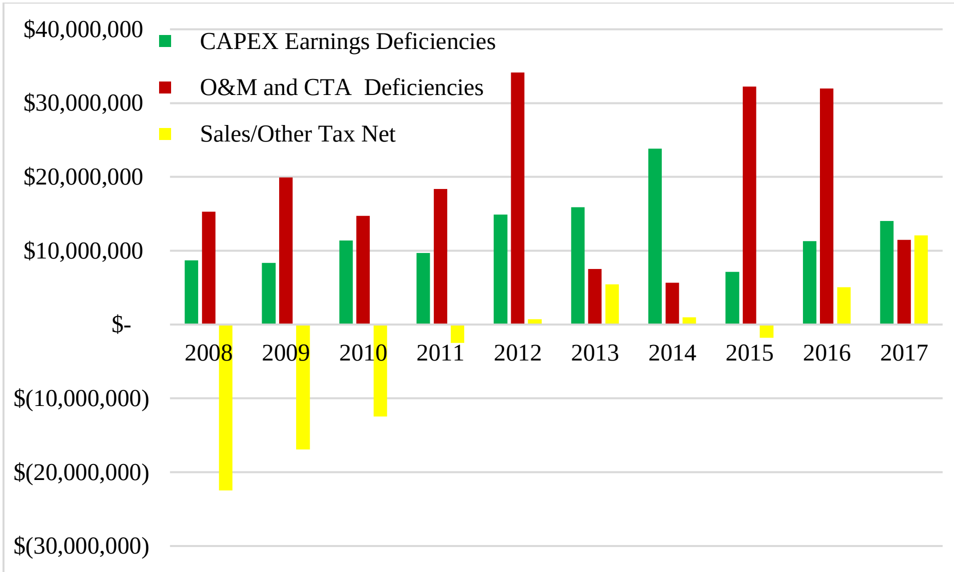
The TEFA originally arose as a temporary surcharge imposed by New Jersey on utilities following energy deregulation. Phased out in 2013, the TEFA was intended to offset state tax revenue losses resulting from eliminating the gross receipts and franchise taxes on utilities. Decreasing ACE sales after 2011 caused corresponding decreases in TEFA taxes, resulting in an offset to earnings deficiencies caused by other drivers.

We therefore combined the Other Taxes and the Revenue and Sales elements into a common category. This combination enabled us to present a factor that more holistically depicts impacts of variations in sales. Accordingly, despite revenue losses associated with sales volumes, the combined Revenue/Sales/Other Taxes category actually had a positive impact on ACE 10-year earnings, offsetting 11 percent of the earnings deficiencies.

3. Annual Deficiency Summary

The next chart shows our earnings deficiency category contributions for each year from 2008 through 2017. CAPEX-related earnings deficiencies contributed significantly in each of the 10 years.

Annual Deficiency Factors



The O&M Expenses and Other category also produced earnings deficiencies in each of our 10 years. These factors caused the largest earnings deficiencies in seven years, producing especially large impacts in 2012, 2015 and 2016. Our detailed, annual analysis (presented later in this chapter) estimates that O&M expense growth above levels included in rates caused about 71 percent ($136 of the $191 million) of earnings deficiencies in this category. The remainder, approximately $55 million, included impacts from other causes, including the CTA. There is no clear way to divide this category into clear sub-categories with defined amounts, given the "Black Box" nature of the settlements that have commonly promoted resolution of ACE base rate increase requests. Nevertheless, our analysis of the O&M increases and Other impacts provides meaningful estimates of the impact of both of these factors on ACE earnings deficiencies, and comprise important results explaining the root causes of these shortfalls.

The chart also shows that the offsetting (positive) effects that Revenue/Sales/Other Taxes category proved strongest in 2008 through 2010, due to then-increasing sales and revenue levels. The chart also shows that the TEFA/Other Tax effect generally offset declining sales in 2011 through 2016. Only in 2017 did the Revenue/Sales/Other Tax category comprise a large percentage of earnings deficiencies.

4. Earnings Deficiency Drivers

a. <u>The Significance of "Test Periods"</u>

Six rate re-sets occurred across the ten years we studied. A total of seven test periods therefore became relevant, counting the one that had formed the basis for rates at the start of the period. The durations between resets varied greatly, from a long of five years to a short of one. With CAPEX additions and increasing O&M expenditures between rate cases the dominant contributors to ACE's 10-year earnings deficiency, it becomes important to take account of the timing of re-sets and the durations between them. All else equal, longer durations between re-sets produce greater growth in CAPEX and O&M expenses not yet reflected in rates. Moreover, rates did not routinely re-set at calendar-year beginnings. Mid-year rate changes required us to break yearly results into pre- and post- re-set portions. The next table shows for each calendar year the underlying test-period. The applicability column indicates the portion of the calendar year associated with each test period.

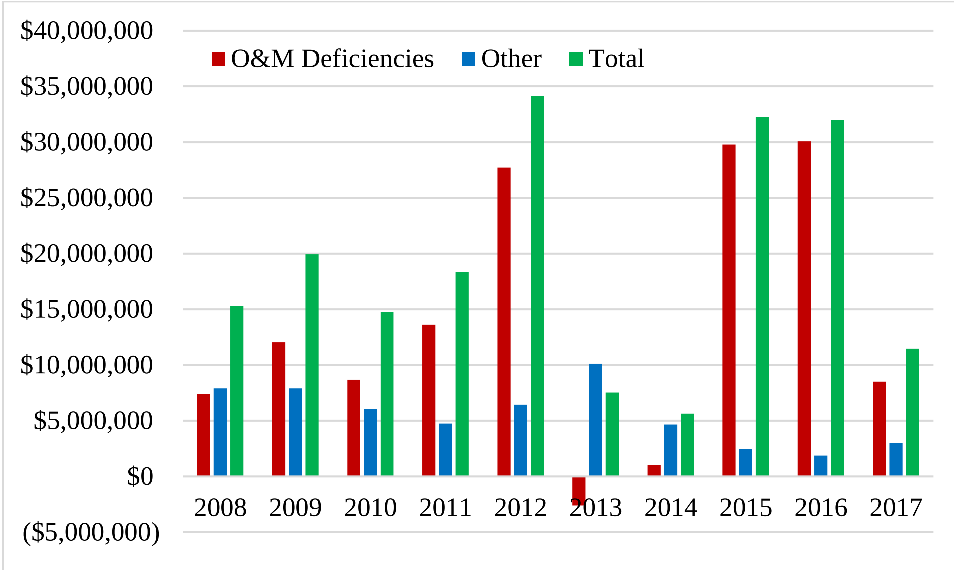
Test Years Underlying ACE Rates

Year	Test Period	Applicability
2008	December 2002	100 percent
2009	December 2002	100 percent
2010	December 2002	41 percent
2010	December 2009	59 percent
2011	December 2009	100 percent
2012	December 2009	83 percent
2012	December 2011	17 percent
2013	December 2011	50 percent
2013	September 2012	50 percent
2014	September 2012	67 percent
2014	December 2013	33 percent
2015	December 2013	100 percent
2016	December 2013	65 percent
2016	December 2015	35 percent
2017	December 2015	75 percent
2017	July 2017	25 percent

b. O&M Expenses as an Earnings Deficiency Driver

We found that the O&M Expenses and Other category had the largest impact on ACE's earnings deficiencies from 2008 through 2017. This category caused about 67 percent ($191 of $285 million) of the 10-year earnings deficiency total and 49 percent of the earnings deficiencies over the second half of the period. The O&M Expenses and Other category produced the largest deficiency factor in seven of the 10 years (2008 through 2012, 2015, and 2016).

O&M Expenses vs. Other



Our early examination of under-earnings disclosed an ability to identify amounts associated with CAPEX and with Revenue/Sales/Other Tax components from ACE's total with reasonable certainty. The remaining earnings deficiencies required estimating methods. The "Black Box" nature of ACE rate settlements (not unusual for settled utility rate cases) precluded definitive determinations of "allowed and recoverable" amounts in this remainder. The settlements have, in contrast, explicitly identified the approved rate base and cost of capital. Working from the "approved rate base", we could calculate earnings deficiencies associated with rate base and depreciation. We could also determine the impact of changes in revenues and sales from that used in the relevant rate case.

Accounting for the contribution of CAPEX-related and Revenue/Sales/Other Tax components left O&M expenses and other adjustments to the revenue requirement as "Black Box" components. Our analysis found them to comprise the biggest contributor to ACE's earnings deficiencies. Left with a need to determine the causation factors indirectly, we sought other analytical means to determine O&M and CTA and their root causes in this category.

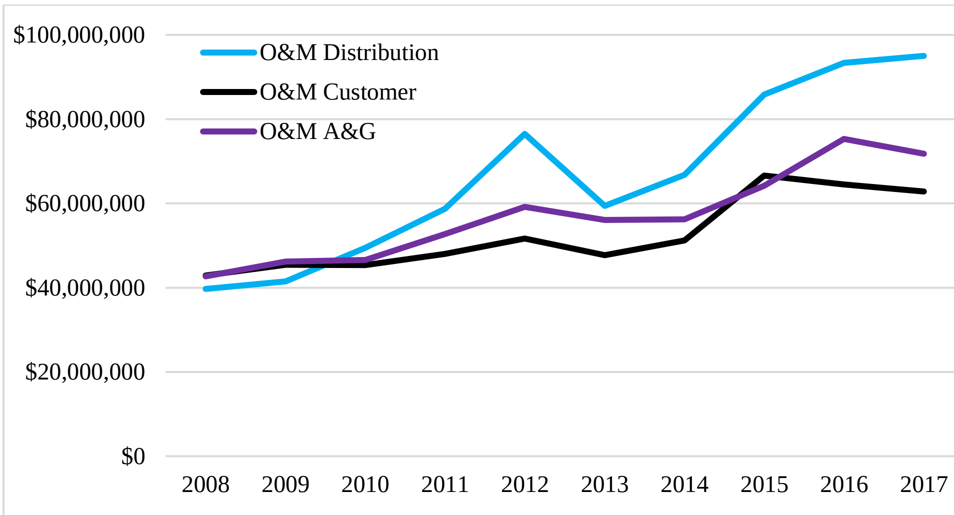
The inability to determine directly the individual contributors to O&M expense increases above those included in rate settlements required alternative approaches. We secured a listing of actual, yearly O&M expenses that reflected:

- Increases or decreases from test period levels from the last rate case
- Increases or decreases from expense levels requested by ACE in the last rate case
- Specific, identifiable causes of increases and decreases in O&M expenses above test period levels.

We used the resulting data sets to conduct analyses of actual, annual O&M expense amounts exceeding test period levels. We found that the differences between actual spends and the rate case test years would explain a large portion of the total ACE earnings deficiencies over the 2008-2017 period.

Actual ACE O&M spending showed material increases throughout the ten-year period, and spiked significantly in 2012, 2015, and 2016. ACE's inability to keep growth in O&M expenses consistent with test-year amounts served as a key driver of earnings deficiencies. The next chart shows the 10-year increases in actual O&M expenses for the Distribution, Customer and Administrative & General (A&G) categories. The annual O&M expense total grew from about $125 million in 2008 to $230 million in 2017, producing a nine-year Compound Annual Growth Rate (CAGR) of 7.0 percent. Distribution O&M grew at an even higher rate, producing a nine-year CAGR of 10.2 percent. Customer O&M grew annually at 4.3 percent and A&G O&M at 6.0 percent.

ACE O&M Expense Growth



We addressed with management the specific sources of increased O&M spending, focusing particularly on the three years showing the largest increases. This interaction identified significant O&M spending above rate-case test-period levels in all three of the following major O&M categories - - Distribution, Customer, and A&G categories. Our analysis of ACE's spending above test-year levels in these categories produced annual "excess" values that we address further in the yearly analyses presented later in this chapter. Accumulating the annual excesses (actual O&M expenditures less the test period levels that formed the basis for rates in those years) produced a pre-tax value of about $231 million in total over the 10 years.

The next table summarizes the results we obtained when applying this concept of "excess" O&M expenditures, identifying the years where we observed particularly significant differences.

O&M Expenses Above Relevant Test-Year Levels

O&M Category	Notable Years	Actual Less Test Year
O&M - Distribution		**$100.4 million**
Storm Response, Restoration & Amortization	2009-2012; 2015-2016	$63.0 million
Vegetation Management	2015-2017	$25.8 million
Distribution Maintenance and Other		$11.6 million
O&M - Customer		**$62.6 million**
Solution 1 Billing System	2014-2016	$27.7 million
Customer Records and Collections	2008-2012	$26.8 million
Customer - Other		$8.1 million
O&M - Administrative & General		**$68.0 million**
Duplicate Credit Charges	2009; 2011-2012	$14.0 Million
Outside Services	2009; 2010; 2012	$12.3 million
Cost of Merger Synergies	2016	$9.0 million
Pensions and Other	2009-2017	$32.7 million
Total Actual O&M Amount above Test Year		**$231 million**

Customer records and collection expense includes the costs of labor, material and expenses incurred in work on customers' applications, billing and accounting, and collections and complaints. Variances in duplicate credit charges result from changes in costs allocated from overhead cost pools, offset in other accounts.

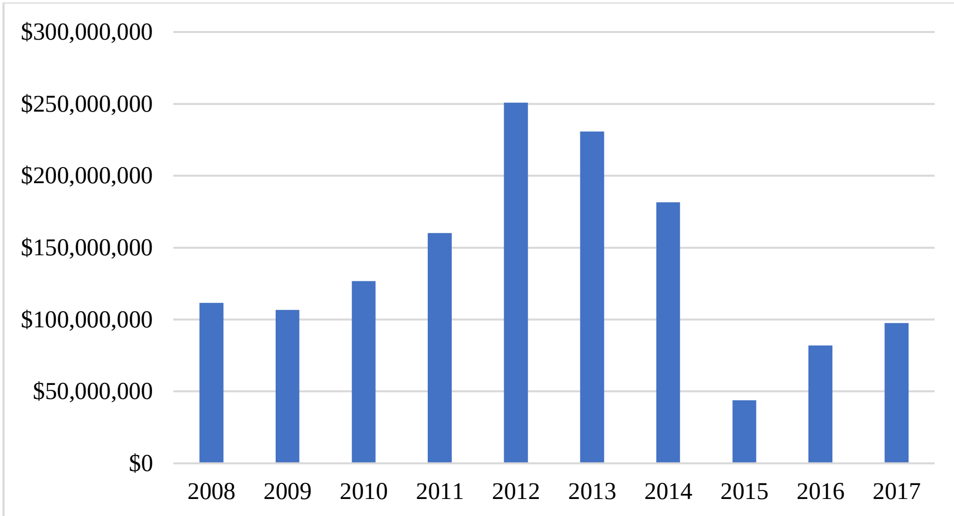
After taxes, this $231 million excess had a negative 10-year impact on earnings of $136 million, almost half (48 percent) of the total ACE earnings deficiencies over the 10-year period.

c. CAPEX as an Earnings Deficiency Driver

CAPEX have proven a steady cause of ACE earnings deficiencies over the 2008-2017 period. CAPEX produced investment amounts consistently above those included in rate base by continuing rate settlements - - and by a substantial amount in each year. We stated earlier that CAPEX caused about 44 percent of the earnings deficiencies over the 10-year period, dropping somewhat to 39 percent over the last five years. The largest contribution of CAPEX spending to earnings deficiencies came from 2012 through 2014.

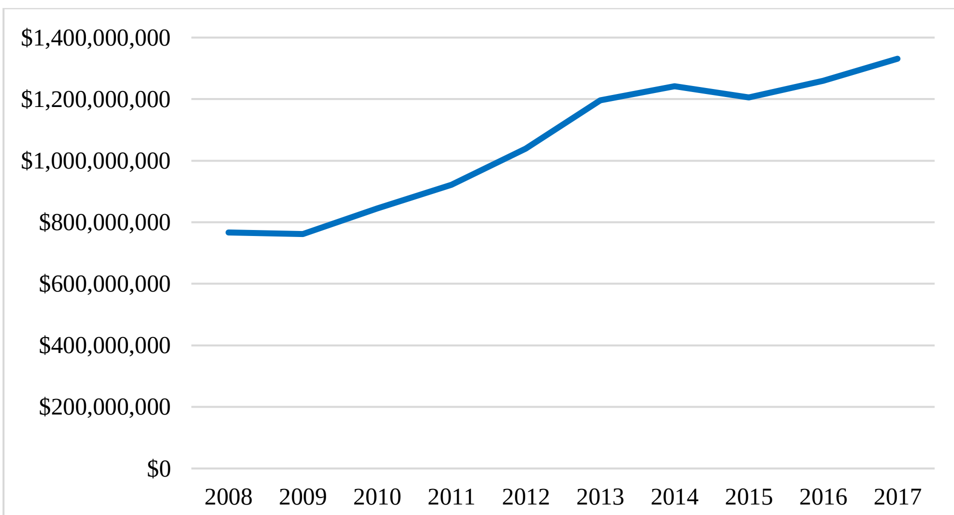
We determined the amounts of "Rate Base Investments Not Yet Recovered" for each year; the next table summarizes them. This category exceeded $150 million each year from 2011 through 2014, reaching more than $230 million in 2012 and 2013. The total amount of Rate Base Investment Not Yet Recovered amounted to $1.39 billion from 2008 through 2017 - - averaging $139 million per year. Over the 10-year period, customer rates therefore did not include the costs of carrying an average of 13.6 percent of ACE investments in what it expected to become part of rate base. The percentage exceeded 14 percent in each year from 2008 through 2014, peaking at 24 percent in 2012.

ACE Capital Expenditures Not Reflected in Rates



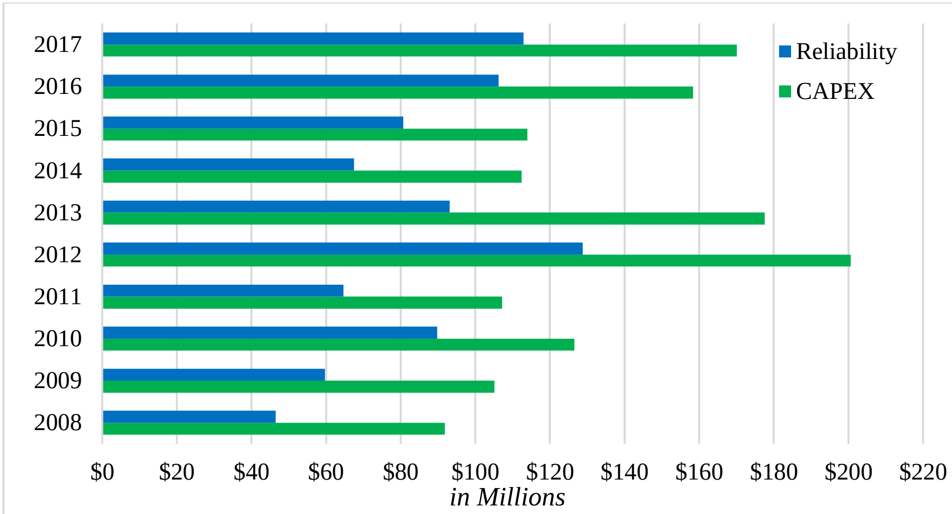
The next chart shows the near doubling of distribution business rate base investment, from $767 million in 2008 to $1.33 billion in 2017. This expansion produced a compound annual growth rate of about 6.3 percent in such investment.

ACE Distribution Business Investment Growth



Promoting reliability drove much of CAPEX during the ten-year period. Management calculated that it spent about $850 million of the $1.33 billion in Distribution CAPEX spent from 2008 through 2017 (about 62.3 percent) to serve reliability-related purposes. We found percentage increases in reliability capital spending across the ten years, as ACE implemented electric Reliability Improvement Plans starting in 2011. The chart below shows the ratios of reliability to total CAPEX for each of the ten years.

CAPEX and Reliability Spend



d. <u>"Other" Sources as Earnings Deficiency Causes</u>

Combining our estimation of the contribution to under-earnings by the O&M and CAPEX categories, as reduced by the positive contributions from Revenues/Sales/Other Taxes, (explained in the next subsection) leaves about $55 million over the ten years - - 19 percent of the total.

We believe that the rate treatment accorded costs saved by consolidated federal tax filings likely produces much of this remainder. Many holding companies make a single, consolidated federal income tax filing; *i.e.*, one combining the results of all their entities. This approach produces net savings at the holding company level when combining the filings of their subsidiaries having positive taxable income with those having negative taxable income. The BPU has required since well before 2008 the sharing of the benefits of consolidated filing with utility customers under a "CTA." The BPU reduced this adjustment in 2014.

Utility rate filings calculate income tax expense (a component of revenue requirements) on the basis of their tax liability as a stand-alone filer, even when their parent makes the actual filing with the Internal Revenue Service on a consolidated basis. As is true with ACE, the operating utilities of holding companies typically produce positive taxable income, with some non-utility enterprises generating negative taxable income. Combining the tax-affecting results of the operating utilities with those of affiliates means that the holding company does not, in effect, pay over to the federal government the full amount of taxes used to calculate the operating utility's stand-alone federal taxes for ratemaking purposes.

A long-standing New Jersey approach has been to make an adjustment intended to offset the stand-alone calculation for ratemaking purposes. An April 2004 BPU order in a Rockland Electric proceeding (Docket No. ER02080614) reaffirmed its method for calculating the CTA, thus giving the method the common "Rockland Method" designation.

We secured from management a calculation of CTA "maximum" levels for each year from 2008 through 2017 using the calculation method used by the BPU at the time of the various rate case settlement discussions. As with O&M expenses, it did not prove possible to determine an amount embedded in rate settlements. However, it did prove possible to calculate a hypothetical amount based on application of the Rockland Method up to 2016.

e. Revenue/Sales/Other Taxes as an Earnings Deficiency Driver

The Revenue/Sales/Other Taxes category has both contributed to and moderated earnings deficiencies in individual years, moderating them overall. Revenue from sales growth reduced deficiencies through 2011, when sales levels exceeding those of the test-periods then relevant to setting rates. For example, 2002 served as the test period for rates in effect during 2008 and 2009.

We included Other Taxes in the same category, because of a logical connection between them, as we explain below. The Other Taxes sub-category, like Revenue/Sales, has also both contributed to and moderated earnings deficiencies across the 10 years. Taxes Other than Income Tax (TOTIT) includes the BPU- assessed TEFA, which came into existence in 1997 as an element of electric industry restructuring in New Jersey. As the 10-year period progressed, growing sales weakness caused a corresponding drop in TEFA costs embedded in rates. This reduction in payments by ACE thus offset some of the revenue loss from reduced sales, especially in 2011 through 2015. Sales and revenue decreases became a more significant earnings deficiency contributor in 2017, when the TEFA did not offset them.

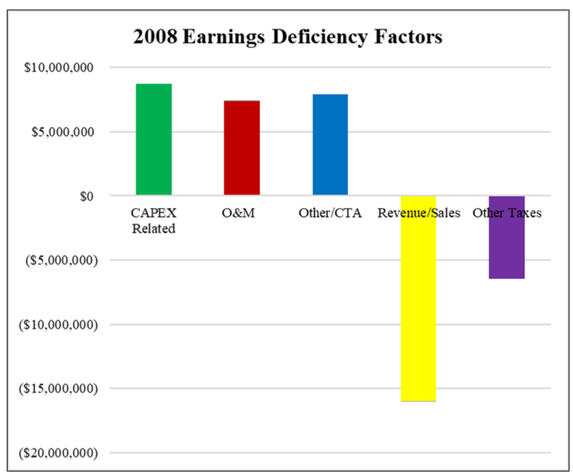
5. Year-By-Year Analysis of Earnings Deficiency Factors

a. 2008 Earnings Deficiency Details

The following table and chart summarize the contributions to the 2008 earnings deficiency.

2008 Earnings Deficiency Contributors

2008 Earnings Deficiency Factors		*Deficiency Factor $*	*Percent of Total*
A) CAPEX: Rate Base and Depreciation Related			
Depreciation	$	(2,519,515)	
Capital Structure and Rate Base		11,236,913	
CAPEX Related	$	8,717,398	564.4%
B) O&M Expenses and Other			
O&M - Distribution (Ops. Eng&Supv)	$	2,000,000	
O&M - Customer (records and collection)		7,100,000	
O&M - A&G (Misc. general exp)		3,400,000	
O&M Expense Related	$	12,500,000	
Less: Tax Effect @ 41.019%		5,127,375	
O&M Earnings Deficiency	$	7,372,625	477.3%
Other/CTA Earnings Deficiency		7,910,204	512.1%
O&M and CTA Related	$	15,282,829	
C) Revenue/Sales Related	$	(15,967,191)	-1033.8%
D) Other Taxes (TEFA)	$	(6,488,477)	-420.1%
Earning Deficiencies - Total of A-D	$	1,544,559	100.0%



The 2008 ACE earnings deficiency of $1.5 million resulted from:

- O&M Expenses ($7.3 million)

- ACE had pre-tax O&M expense increases of $12.5 million, including:
- $2 million for Distribution, $7.1 million for Customer, and $3.4 million for A&G
- Operations engineering and supervision expense increases of $2 million
- Customer record and collection expenses increased by $7.1 million
- A&G expense increases of $3.4 million were for miscellaneous and general

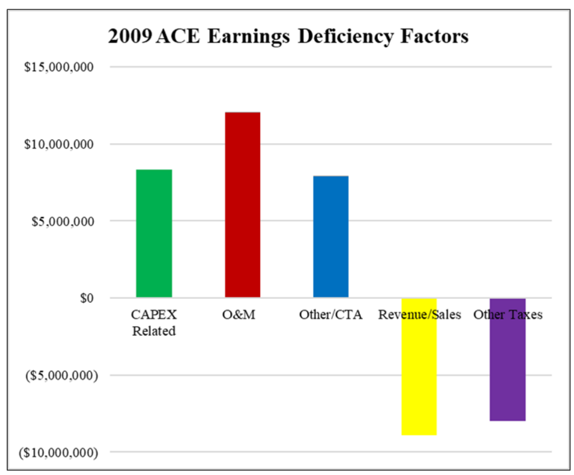
- CAPEX ($8.7 million); ACE invested capital of:
  - $91.8 million in 2008, with $46.5 million for reliability
  - CAPEX caused rate base to be $112 million above the 2002 rate case inclusion
- Revenue/Sales/Other Taxes (-$22.5 million)
  - Sales increased by 11.2 percent from the 2002 test period, causing $16.0 million of increased earnings
  - Other Taxes decreased by $6.5 million as compared to the 2002 test period
- Other/CTA ($7.9 million)
  - “Remainder” earnings deficit of $7.9 million
  - CTA estimated range of $1.8 to $3.6 million using 25-50% of Rockland Method maximum.

b. <u>2009 Earnings Deficiency Details</u>

The following table and chart summarize the contributions to the 2009 earnings deficiency.

2009 Earnings Deficiency Contributors

2009 Earnings Deficiency Factors		*Deficiency Factor $*	*Percent of Total*
A) CAPEX: Rate Base and Depreciation Related			
Depreciation		$ (2,559,101)	
Capital Structure and Rate Base		10,893,855	
CAPEX Related		$ 8,334,754	73.4%
B) O&M Expenses and Other			
O&M - Distribution (Emergency Restoration)		$ 3,900,000	
O&M - Customer (Records and Collections)		9,700,000	
O&M - A&G (Outside/Srvs, Dup Credit Charges)		6,800,000	
O&M Expense Related		$ 20,400,000	
Less: Tax Effect @	41.019%	8,367,876	
O&M Earnings Deficiency		$ 12,032,124	106.0%
Other/CTA Earnings Deficiency		7,896,221	69.5%
O&M and CTA Related		$ 19,928,345	
C) Revenue/Sales Related		$ (8,931,634)	-78.7%
D) Other Taxes		$ (7,978,027)	-70.3%
Earning Deficiencies - Total of A-D		$ 11,353,438	100.0%



The 2009 ACE earnings deficiency of $11.4 million resulted from:

- O&M Expenses ($12.0 million)
  - ACE had pre-tax O&M expense increases of $20.4 million, including:
  - $3.9 million for Distribution, $9.7 million for Customer, and $6.8 million for A&G
  - Emergency restoration expenses of $3.9 million
  - Customer record and collection expenses increased by $9.7 million

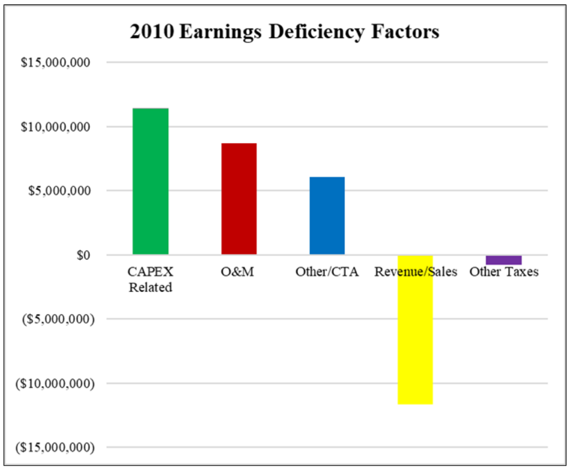
  - A&G expense increases of $6.8 million were for outside services and duplicate credit charges
- CAPEX ($8.3 million); ACE invested capital of:
  - $105.1 million in 2009, with $59.7 for reliability
  - $91.8 million in 2008, with $46.5 million for reliability
  - CAPEX caused rate base to be $106.7 million above rate case inclusion
- Revenue/Sales/Other Taxes (-$16.9 million)
  - Sales increased by 6.3 percent since the 2002 test period, causing $8.9 million of increased earnings
  - Other Taxes decreased by $8.0 million as compared to the 2002 test period
- Other/CTA/Remainder ($7.9 million)
  - "Remainder" earnings deficit of $7.9 million
  - CTA estimated range of $1.8 to $3.6 million using 25-50% of Rockland Method maximum.

c. <u>2010 Earnings Deficiency Details</u>

The following table and chart summarize the contributions to the 2010 earnings deficiency.

2010 Earnings Deficiency Contributors

	2010 Earnings Deficiency Factors			*Deficiency Factor $*	*Percent of Total*
A)	CAPEX: Rate Base and Depreciation Related				
	Depreciation			$ (1,885,524)	
	Capital Structure and Rate Base			13,281,906	
			CAPEX Related	$ 11,396,383	83.2%
B)	O&M Expenses and Other				
	O&M - Distribution (emerg. restoration)			$ 9,000,000	
	O&M - Customer (Records and collection)			3,200,000	
	O&M - A&G (outside services)			2,500,000	
	O&M Expense Related			$ 14,700,000	
	Less: Tax Effect @	41.019%		6,029,793	
	O&M Earnings Deficiency			$ 8,670,207	63.3%
	Other/CTA Earnings Deficiency			6,075,652	44.4%
	O&M and CTA Related			$ 14,745,859	
C)	Revenue/Sales Related			$ (11,656,735)	-85.1%
D)	Other Taxes (TEFA)			$ (790,862)	-5.8%
	Earning Deficiencies - Total of A-D			$ 13,694,644	100.0%



The 2010 ACE earnings deficiency of $13.7 million resulted from:

- CAPEX ($11.4 million); ACE invested capital of:
  - $126.6 million in 2010, with $89.8 million for reliability
  - $105.1 million in 2009, with $59.7 for reliability
  - CAPEX caused rate base to be $126.8 million above rate case inclusion
- O&M Expenses ($8.7 million)
  - ACE had pre-tax O&M expense increases of $14.7 million, including:
  - $9 million for Distribution, $3.2 million for Customer, and $2.5 million for A&G
  - Emergency restoration expenses of $9 million

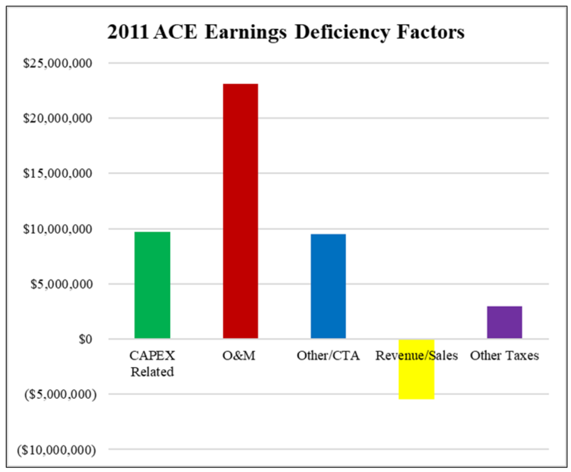
    - Customer record and collection expenses increased by $3.2 million
    - A&G expense increases of $2.5 million sere for electric outside services
- Revenue/Sales/Other Taxes (-$11.7 million)
    - Sales increased by 4.6 percent since the 2009, causing $11.7 million of increased earnings
- CTA/Remainder ($6.1 million)
    - "Remainder" earnings deficit of $6.1 million
    - CTA estimated range of $7 to $14 million using 25-50% of Rockland Method maximum.

d. <u>2011 Earnings Deficiency Details</u>

The following table and chart summarize the contributions to the 2011 earnings deficiency.

2011 Earnings Deficiency Contributors

2011 Earnings Deficiency Factors			*Deficiency Factor $*	*Percent of Total*
A) CAPEX: Rate Base and Depreciation Related				
Depreciation		$	(977,257)	
Capital Structure and Rate Base			10,696,105	
CAPEX Related		$	9,718,848	37.9%
B) O&M Expenses and Other				
O&M - Distribution (Emergency Restoration)		$	10,000,000	
O&M - Customer (Records and Collections)			2,000,000	
O&M - A&G (Pensions and Benefits)			4,000,000	
O&M - A&G (Duplicate Credit Charges)			6,000,000	
O&M Other			1,100,000	
O&M Expense Related		$	23,100,000	
Less: Tax Effect @	41.019%		9,475,389	
O&M Earnings Deficiency		$	13,624,611	53.2%
Other/CTA Earnings Deficiency			4,731,397	18.5%
O&M and CTA Related		$	18,356,008	
C) Revenue/Sales Related		$	(5,458,911)	-21.3%
D) Other Taxes		$	2,994,354	11.7%
Earning Deficiencies - Total of A-D		$	25,610,298	100.0%



The 2011 ACE earnings deficiency of $25.6 million resulted from:

- O&M Expenses ($13.6 million; 53.2 percent)
    - ACE had pre-tax O&M expense increases of $23.1 million, including:
    - $10 million for Distribution, $2 million for Customer, and $11.1 million for A&G
    - Emergency restoration expenses of $10 million, including hurricane Irene ($8 million)
    - Customer record and collection expenses increased by $2 million
    - A&G expense increases were for pension and benefits ($4 million) and duplicate credit charges ($6 million)
- CAPEX ($9.7 million; 37.9 percent); ACE invested capital of:
    - $107.2 million in 2011, with $64.7 million for reliability
    - $126.6 million in 2010, with $89.8 million for reliability
    - CAPEX caused rate base to be $160 million above rate case inclusion
- Revenue/Sales/Other Taxes (-$2.5 million; -9.5 percent)

- Sales increased by 1.5 percent since the 2009, causing $5.5 million of increased earnings
- Partially offset by related TEFA tax increases of $3.0 million

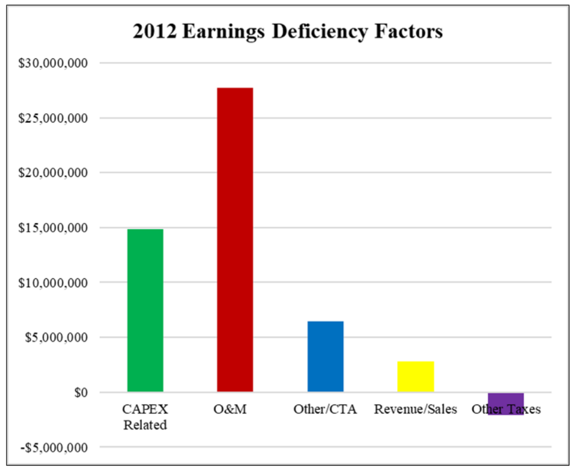
- CTA/Remainder ($4.7 million; 18.5 percent)
  - “Remainder” earnings deficit of $4.7 million
  - CTA estimated range of $7 to $14 million using 25-50% of Rockland Method maximum.

e. <u>2012 Earnings Deficiency Details</u>

The following table and chart summarize the contributions to the 2012 earnings deficiency.

2012 Earnings Deficiency Contributors

2012 Earnings Deficiency Factors			*Deficiency Factor $*	*Percent of Total*
A) CAPEX: Rate Base and Depreciation Related				
Depreciation			$ (1,001,191)	
Capital Structure and Rate Base			15,886,830	
	CAPEX Related		$ 14,885,639	29.9%
B) O&M Expenses and Other				
O&M - Distribution (Derecho/Sandy storm)			$ 27,000,000	
O&M - Distribution Other			4,200,000	
O&M - Customer (Records and collection)			4,800,000	
O&M - A&G (O/S services and dup charges)			11,000,000	
O&M Expense Related			$ 47,000,000	
Less: Tax Effect @		41.019%	19,278,930	
O&M Earnings Deficiency			$ 27,721,070	55.7%
Other/CTA Earnings Deficiency			6,438,941	12.9%
	O&M and CTA Related		$ 34,160,011	
C) Revenue/Sales Related			$ 2,837,727	5.7%
D) Other Taxes (TEFA)			$ (2,109,221)	-4.2%
Earning Deficiencies - Total of A-D			$ 49,774,156	100.0%



The 2012 ACE earnings deficiency of $49.8 million resulted from:

- O&M Expenses ($27.7 million; 55.7 percent)
  - ACE had pre-tax O&M expense increases of $47 million, including:
  - $31.2 million for Distribution, $4.8 million for Customer, and $11.0 million for A&G
  - Storm restoration expenses for hurricanes Derecho and Sandy accounted for $27 million
  - Customer record and collection expenses increased by $4.8 million
  - A&G expense increases of $11 million were for electric outside services and duplicate credit charges
- CAPEX ($14.9 million; 29.9 percent); ACE invested capital of:
  - $200.6 million in 2012, including $128.8 million for reliability
  - $107.2 million in 2011, with $64.7 million for reliability
  - $126.6 million in 2010, with $89.8 million for reliability
  - CAPEX caused rate base to be $251 million above rate case inclusion
- Revenue/Sales/Other Taxes ($0.7 million; 1.5 percent)

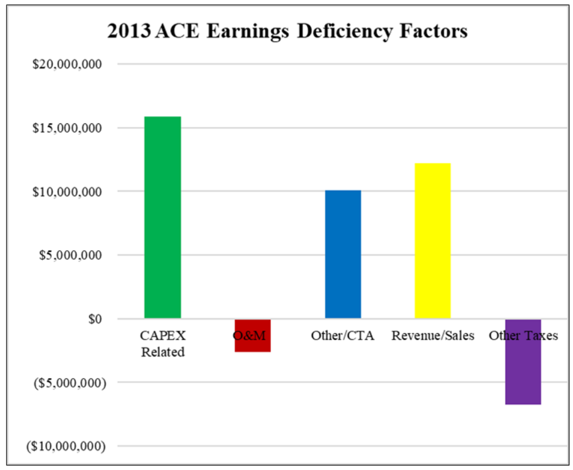
  - Sales decreased by 1.3 percent since the 2009, causing $2.8 million of decreased earnings
  - Mostly offset by related TEFA tax offsets of $2.1 million
- CTA/Remainder ($6.4 million; 12.9 percent)
  - "Remainder" earnings deficit of $6.5 million
  - CTA estimated range of $7 to $14 million using 25-50% of Rockland Method maximum.

f. 2013 Earnings Deficiency Details

The following table and chart summarize the contributions to the 2013 earnings deficiency.

2013 Earnings Deficiency Contributors

2013 Earnings Deficiency Factors			*Deficiency Factor $*	*Percent of Total*
A) CAPEX: Rate Base and Depreciation Related				
Depreciation			$ 733,630	
Capital Structure and Rate Base			15,152,011	
	CAPEX Related		$ 15,885,641	55.0%
B) O&M Expenses and Other				
O&M - Distribution Other			$ (5,900,000)	
O&M - Customer Other			(500,000)	
O&M - A&G			2,000,000	
O&M Expense Related			$ (4,400,000)	
Less: Tax Effect @	41.019%		(1,804,836)	
O&M Earnings Deficiency			$ (2,595,164)	-9.0%
Other/CTA Earnings Deficiency			10,114,815	35.1%
O&M and CTA Related			$ 7,519,651	
C) Revenue/Sales Related			$ 12,207,768	42.3%
D) Other Taxes (TEFA)			$ (6,756,046)	-23.4%
Earning Deficiencies - Total of A-D			$ 28,857,014	100.0%



The 2013 ACE earnings deficiency of $28.9 million resulted from:

- CAPEX ($15.9 million; 55.0 percent); ACE invested capital of:
  - $177.6 million in 2013, $93.1 million for reliability
  - $200.6 million in 2012, $128.8 million for reliability
  - CAPEX caused rate base to be $230.7 million above rate case inclusion
- Revenue/Sales/Other Taxes ($5.5 million; 18.9 percent)
  - Sales decreased by 5.6 percent since the 2012 and 2011 test periods, causing $12.2 million of decreased earnings
  - Residential sales decreases were due to the overall economy, solar installations and energy efficiency efforts in the region
  - Commercial sales decreases were in part due to lower casino sales since 2011
  - Sales losses were partially offset by related TEFA tax decreases of $6.8 million
- O&M Expenses (-$2.6 million; -9.0 percent)
  - ACE had pre-tax O&M expense decreases of $4.4 million
  - Distribution O&M expenses decreased by $5.9 million
  - A&G O&M expenses increased by $2.0 million

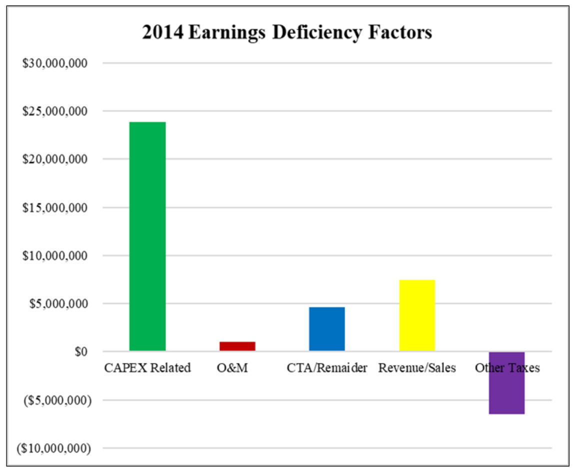
- CTA/Remainder ($10.1 million; 35.0 percent)
  - "Remainder" earnings deficit of $10.1 million
  - CTA estimated range of $6.5 to $14 million using 25-50% of Rockland Method maximum

g. <u>2014 Earnings Deficiency Details</u>

The following table and chart summarize the contributions to the 2014 earnings deficiency.

2014 Earnings Deficiency Contributors

2014 Earnings Deficiency Factors		*Deficiency Factor $*	*Percent of Total*
A) CAPEX: Rate Base and Depreciation Related			
Depreciation		$ 10,588,625	
Capital Structure and Rate Base		13,257,144	
CAPEX Related		$ 23,845,770	78.3%
B) O&M Expenses and Other			
O&M - Distribution		$ (2,400,000)	
O&M - Customer (Meter data and Solution 1)		2,700,000	
O&M - A&G		1,400,000	
O&M Expense Related		$ 1,700,000	
Less: Tax Effect @	41.019%	697,323	
O&M Earnings Deficiency		$ 1,002,677	3.3%
Other/CTA Earnings Deficiency		4,643,272	15.2%
O&M and CTA Related		$ 5,645,949	
C) Revenue/Sales Related		$ 7,439,736	24.4%
D) Other Taxes		$ (6,475,693)	-21.3%
Earning Deficiencies - Total of A-D		$ 30,455,762	100.0%



The 2014 ACE earnings deficiency of $30.5 million resulted from:

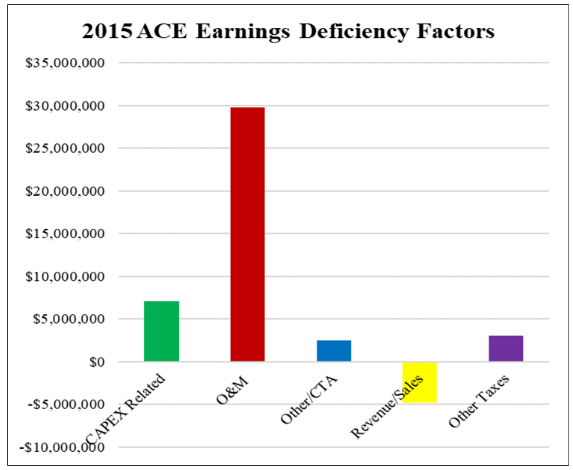
- CAPEX ($23.8 million; 78.3 percent); ACE invested capital of:
  - $112.4 million in 2014, $67.5 million for reliability
  - $177.6 million in 2013, $93.1 million for reliability
  - CAPEX caused rate base to be $181.4 million above rate case inclusion
  - CAPEX caused depreciation to be $18 million above rate case levels
- O&M Expenses ($1.0 million; 3.3 percent)
  - ACE had pre-tax O&M expense increases of $1.7 million
- Revenue/Sales/Other Taxes ($0.9 million; 3.1 percent)
  - Sales decreased by 4 percent since the 2012, causing $7.4 million of decreased earnings
  - Residential sales decreases were due to the overall economy, solar installations and energy efficiency efforts in the region
  - Sales losses were mostly offset by related TEFA tax decreases of $6.5 million
- Consolidated/Remainder ($4.6 million; 15.2 percent)
  - "Remainder" earnings deficit of $4.7 million
  - CTA estimated range of $7 to $14 million using 25-50% of Rockland Method maximum.

h. <u>2015 Earnings Deficiency Details</u>

The following table and chart summarize the contributions to the 2015 earnings deficiency.

2015 Earnings Deficiency Contributors

2015 Earnings Deficiency Factors		*Deficiency Factor $*	*Percent of Total*
A) CAPEX: Rate Base and Depreciation Related			
Depreciation		$ 5,051,656	
Capital Structure and Rate Base		2,080,011	
CAPEX Related		$ 7,131,667	19.0%
B) O&M Expenses and Other			
O&M - Distribution (Vegetation Management)		$ 12,000,000	
O&M - Distribution (Reactionary Storm)		3,000,000	
O&M - Distribution (Substation Maint)		2,000,000	
O&M - Distribution (Derecho/Sandy Amort)		3,000,000	
O&M - Distribution - Other		2,200,000	
O&M - Customer (Solution One)		16,000,000	
O&M - Customer - Other		1,800,000	
O&M - A&G - Other		10,500,000	
O&M Expense Related		$ 50,500,000	
Less: Tax Effect @	41.019%	20,714,595	
O&M Earnings Deficiency		$ 29,785,405	79.2%
Other/CTA Earnings Deficiency		2,457,033	6.5%
O&M and CTA Related		$ 32,242,438	
C) Revenue/Sales Related		$ (4,828,581)	-12.8%
D) Other Taxes		$ 3,058,707	8.1%
Earning Deficiencies - Total of A-D		$ 37,604,231	100.0%



The 2015 ACE earnings deficiency of $37.6 million resulted from:

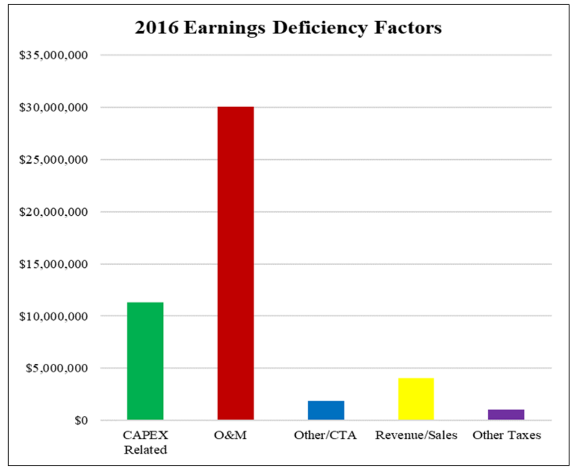
- O&M Expenses ($32.2 million; 85.7 percent)
  - ACE had pre-tax O&M expense increases of $50.5 million, including:
  - $22.2 million for Distribution, $17.8 million for Customer, and $10.5 million for A&G
  - Vegetation management accounted for $12 million
  - Solution One billing system of $16 million
  - A&G - Other expenses of $10.5 million
- CAPEX ($7.1 million; 19.0 percent); ACE invested capital of:
  - $114 million in 2015, $80.7 million in reliability investments
  - $112.4 million in 2014, $67.5 million for reliability
  - CAPEX caused rate base to be $44.0 million above rate case inclusion
- Revenue/Sales/Other Taxes (-$1.7 million; -4.7 percent)
  - Sales increased by 1 percent since 2013, causing $4.8 million of increased earnings
  - Partially offset by related TEFA tax increases of $3.1 million
- CTA/Remainder ($2.5 million; 6.5 percent)
  - "Remainder" earnings deficit of $2.5 million
  - CTA estimated range of $3.5 to $7.0 million using 25-50% of Rockland Method maximum.

i. <u>2016 Earnings Deficiency Details</u>

The following table and chart summarize the contributions to the 2016 earnings deficiency.

2016 Earnings Deficiency Contributors

2016 Earnings Deficiency Factors			*Deficiency Factor $*	*Percent of Total*
A) CAPEX: Rate Base and Depreciation Related				
Depreciation		$	5,614,649	
Capital Structure and Rate Base			5,677,583	
	CAPEX Related	$	11,292,231	23.4%
B) O&M Expenses and Other				
O&M - Distribution (Vegetation Mgmt)		$	10,000,000	
O&M - Distribution (Reactionary storm)			3,000,000	
O&M - Distribution (Substation Maint)			2,000,000	
O&M - Distribution (Storm Restoration)			4,000,000	
O&M - Distribution Other			3,200,000	
O&M - Customer (New billing system)			9,000,000	
O&M - Customer Other			3,400,000	
O&M - A&G (Merger synergies - CTA)			9,000,000	
O&M - A&G Other			7,400,000	
O&M Expense Related		$	51,000,000	
Less: Tax Effect @	41.019%		20,919,690	
O&M Earnings Deficiency		$	30,080,310	62.2%
Other/CTA Earnings Deficiency			1,881,960	3.9%
O&M and CTA Related		$	31,962,270	
C) Revenue/Sales Related		$	4,038,320	8.4%
D) Other Taxes		$	1,032,948	2.1%
Earning Deficiencies - Total of A-D		$	48,325,769	100.0%



The 2016 ACE earnings deficiency of $48.3 million resulted from:

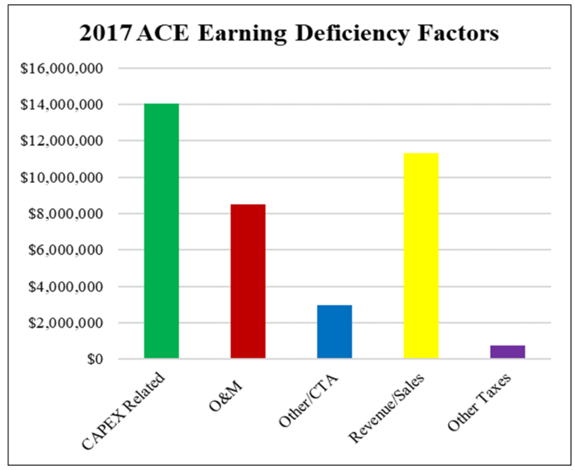
- O&M Expenses ($30.1 million; 62.2 percent)
  - ACE had pre-tax O&M expense increases of $51 million, including:
  - $22.2 million for Distribution, $12.4 million for Customer, and $16.4 million for A&G
  - Vegetation management accounted for $10 million
  - Solution One billing system of $9 million
  - Cost to achieve Merger Synergies of $9 million
- CAPEX ($11.3 million; 23.4 percent); ACE invested capital of:
  - $158.4 million in 2016, $106.2 million in reliability investments
  - $114 million in 2015, $80.7 million in reliability investments
  - $112.4 million in 2014, $67.5 million for reliability
  - CAPEX caused rate base to be $81.9 million above rate case inclusion
- Revenue/Sales/Other Taxes ($4.0 million; 8.4 percent)
  - Sales declined by 5 percent since the 2013 test period, mostly in residential and commercial
  - Residential caused by solar installations and energy efficiency
  - Commercial caused by casino closures
- CTA/Remainder ($1.9 million; 3.9 percent)
  - "Remainder" earnings deficit of $1.9 million
  - CTA estimated range of $3.5 to $7.0 million using 25 to 50% of Rockland Method maximum.

j. 2017 Earnings Deficiency Details

The following table and chart summarize the contributions to the 2017 earnings deficiency.

2017 Earnings Deficiency Contributors

2017 Earnings Deficiency Factors		*Deficiency Factor $*	*Percent of Total*
A) CAPEX: Rate Base and Depreciation Related			
Depreciation		$ 7,142,029	
Capital Structure and Rate Base		6,908,047	
CAPEX Related		$ 14,050,076	37.3%
B) O&M Expenses and Other			
O&M - Distribution (Vegetation Mgmt)		$ 3,800,000	
O&M - Distribution Other		4,300,000	
O&M - Customer Other		3,400,000	
O&M - A&G Other		2,900,000	
O&M Expense Related		$ 14,400,000	
Less: Tax Effect @	41.019%	5,906,736	
O&M Earnings Deficiency		$ 8,493,264	22.6%
Other/CTA Earnings Deficiency		2,984,478	7.9%
O&M and CTA Related		$ 11,477,742	
C) Revenue/Sales Related		$ 11,335,111	30.1%
D) Other Taxes		$ 758,881	2.0%
Earning Deficiencies - Total of A-D		$ 37,621,811	100.0%



The 2017 ACE earnings deficiency of $37.6 million resulted from:

- CAPEX ($14.1 million; 37.4 percent); ACE invested capital of:
  - $170.1 million in 2017, $112.9 million in reliability investments
  - $158 million in 2016, $106.2 million in reliability investments
  - CAPEX caused rate base to be $97.5 million above rate case inclusion
- Revenue/Sales/Other Taxes ($11.3 million; 30.1 percent)
  - Sales declined by 7 percent since the 2015 test period, mostly in the residential class
  - Caused by overall economic conditions, solar installations and energy efficiency
- O&M Expenses ($8.5 million; 22.6 percent)
  - ACE had pre-tax O&M expense increases of:
  - $8.1 million for Distribution, $3.4 million for Customer, and $2.9 million for A&G
  - Vegetation management accounted for $3.8 million of the total
- CTA/Remainder ($3.0 million; 7.9 percent)
  - BPU calculation method produced no 2017 adjustment
  - Remainder earnings deficiency was due to other causes.

D. Conclusions

1. O&M Expense increases account for almost half of ACE earnings deficiencies from 2008 through 2017.

O&M expense dollars actually spent by ACE above the levels included in rates caused about $136 million of the $285 million earnings deficiencies, or about 48 percent of the ACE total. Increased ACE O&M spending expenses above levels included in test periods used for setting rates proved the largest single cause of earnings deficiencies over the 2008 through 2017 period.

ACE's actual, realized O&M spending increased significantly above previous levels during seven of the 10 years at issue. Identified root causes of the pre-tax increases in a relatively small number of areas amounts to $170 million, making them the dominant causes of the increases:

- Distribution O&M
  - Storm emergency response, restoration and amortization - - $63 million
  - Vegetation management - - $25.8 million
- Customer O&M
  - Solution 1 billing system - - $27.7 million
  - Customer records and collections - - $26.8 million
- A&G O&M
  - Duplicate credit charges - - $14 million
  - Outside services - - $12.3 million.

The growth in O&M expenses in the ACE Distribution business was clearly a key driver in ACE's historic earnings deficiencies. O&M annual expenses grew from about $125 million in 2008 to $230 million in 2017, a nine-year CAGR of 7.0 percent. Distribution O&M grew at an even higher rate, with a nine-year CAGR of 10.2 percent.

2. CAPEX spending not yet included in rates also accounted for a percentage approaching half the ACE earnings deficiencies.

CAPEX caused about 44 percent of the earnings deficiencies over the 10-year period - - about $125 million of the $285 million of total deficiencies. ACE made distribution-business capital investments that awaited subsequent rate proceedings for recovery of the costs they produced.

The total amount of capital investments awaiting inclusion in rate base and eventually reflected in rate settlements totaled $1.39 billion from 2008 through 2017 - - an average of $139 million per year. Over the 10-year period, ACE was not recovering an average of 13.6 percent of its rate base investments. The effects of this factor exceeded 14 percent in each year from 2008 through 2014, and peaked at 24 percent in 2012. Rate base investments pending recovery exceeded $150 million in each year from 2011 through 2014, and exceeded $230 million in 2012 and 2013.

3. The "Other" category including the CTA caused a lesser portion of ACE earnings deficiencies.

Accounting for our other defined earnings deficiency factors left $55 million in 10-year under-earnings. This $55 million remainder falls within a range calculated for the CTA. The adjustment therefore appears to explain most or all of the remainder earnings deficiencies. The Black Box nature of rate case settlements across the 10 years makes it impossible to calculate the effect of the CTA more precisely.

The earnings effect of this adjustment has required a complex, long-term calculation. We applied a 25-50 percent factor to management's calculation of maximum annual CTA impacts using the Rockland Method. Applying this range to management's calculations produced a range of values in potential CTA earnings deficiencies for the 10 years. We note that the $55 million remainder of earning deficiencies fell within this range.

4. Increasing ACE revenue and sales generally mitigated earnings deficiencies before 2017.

Increasing revenue and sales reduced earnings deficiencies for ACE from 2008 through 2011. This trend reversed in 2012-2017, as sales declined due to the regional economy and casino closings resulting in decreased distribution revenues. From 2011-2013, the impact of "TEFA Other Tax" based on volumetric changes in sales largely blunted this effect. Taken over the entire 10-year period, the combined Revenue/Sales/Other Taxes category benefitted ACE earnings, offsetting 11 percent of the ACE earnings deficiencies.

5. Exelon and PHI have included improved ACE financial performance regarding O&M expenses and CAPEX recovery in their Long-Term Plans.

PHI has recognized that sub-standard Returns on Equity (ROE) have been a problem for many years, at ACE as well as at DPL and Pepco. Both Exelon and PHI have internally recognized that rapid increases in O&M expenses, as well as increased levels of CAPEX, have been primary factors causing earnings deficiencies in the PHI utilities. In fact, the PHI CFO notes that the rapid increases in O&M expenses at the PHI utilities was viewed as an "opportunity" and a selling point for the Exelon merger. The reduction of the rapid increases in PHI O&M expenditures has been a driving force in improving ROEs and financial performance in the PHI utilities.

Post-merger, management has forecasted improved ROE and financial performance for the PHI utilities. This forecast becomes particularly evident in the Long-Range Plans (LRPs) forming a cornerstone of Exelon financial planning. Merger synergies reduced regulatory lag, annual rate filings, and new cost trackers underlie expected improvements in ACE returns shown in the LRPs.

Exelon management also seeks to drive performance improvements through "O&M Challenges" that impel its operating utilities to look for additional O&M efficiencies. The LRPs also include "Capital Challenges" driving a search for lowered CAPEX costs without cutting projects. The LRPs include these Challenges as means to further increase performance and utility returns in the forecast years. ACE specifically includes improved financial and ROE performance in its planning, driven by flattening O&M expenses and improved recovery of its capital expenditures.

6. A litigated rate case would establish a clear baseline for monitoring changes in the costs ACE incurs to serve New Jersey customers.

Growth in O&M and capital expenditures have been the dominant reasons behind ACE earnings shortfalls, but the long string of "black box" rate case settlements makes reasonably precise measurement of the magnitude of all the contributors difficult. The use of a fully-litigated rate case would provide specific values for each of the capital and expense categories that comprise the elements of the approved revenue requirement in rate case proceedings. Such cost specificity would provide significantly greater visibility on the success of ACE in managing its costs to approved cost components.

Chapter III: Power Supply and Market Conditions Table of Contents

Chapter III: Power Supply and Market Conditions

A. Chapter Summary

This chapter addresses the market conditions under which ACE operates. The Basic Generation Service (BGS) process drives power supply at ACE, as it has done now for many years. That process, which supplies all energy used by ACE customers who do not chose competitive suppliers, operates in the robust Pennsylvania New Jersey Maryland Interconnection LLC (PJM) market that includes the ACE region. It has produced reliable supply, competitive conditions, and economical prices. ACE has also made purchases under mandated contracts from three legacy, non-utility generators (NUGs), under legacy contracts, liquidating the amounts into wholesale markets. Two of those contracts remain; the third expired in September 2016. We found that allocation of the purchase costs involved appropriate, but not controlled by documentation of the processes followed.

B. Background

1. Market Conditions

Market conditions in the ACE region generally typify those of the PJM Interconnection as a whole. The region has benefitted significantly from healthy levels of capacity and growth in hydrofracking in recent years to produce ample, economically priced power and energy. The New Jersey BGS acquisition process's annual auctions drive the power supply function at ACE, as it does for the state's other electric distribution companies (EDCs). Wholesale power suppliers bid on blocks of load for each of New Jersey's utilities as part of a generally consolidated auction process. Market conditions, particularly wholesale energy forward prices and capacity auction prices, therefore comprise the key market conditions influencing ACE customer supply costs. We address that process below.

2. NUG Contracts

Apart for what it procures as part of the BGS auction process, ACE also makes purchases from two remaining legacy NUG facilities. ACE has purchased capacity and energy output from the NUGs at their discretion and availability, pursuant to contract rates. ACE in turn bids the energy and capacity from those plants into PJM's day-ahead and real-time energy market and capacity market. This process is described in detail in Section C of this chapter. Outside of the BGS auction and the NUG purchases, there are no other sources of power supply for ACE. ACE does not have the ability to seek bilateral contracts to displace either the NUG or BGS auction resources, nor does it have any self-generation resources. As such, there are no fuel purchases or power purchases beyond the scope of the BGS auction and NUGs.

3. PJM Participation

As a New Jersey EDC, ACE acts as a PJM market participant. Several other Exelon businesses play key PJM roles as well. These affiliates include other EDCs, and entities that provide transmission, distribution and other related delivery services within PJM. Other affiliates provide generating capacity and energy delivered by those Load Service Entities.

Liberty examined how ACE, through its service company, PHISCo manages PJM-related issues. We considered the ability to represent ACE customer interests within PJM, versus those of its affiliates. This consideration has substantial importance, given the massive size of Exelon's PJM generating portfolio and the number Exelon-owned affiliates.

The PJM stakeholder process affects the capacity and energy and the demand response markets within PJM. There are 1,024 PJM members, each designated into one of the following *sectors*: Electric Distributor, End-Use Customer, Generation Owner, Other Supplier, and Transmission Owner. Thirteen Exelon-owned entities operate as PJM members, representing all but the End-Use Customer sector. ACE is a member of the Electric Distributor sector. Exelon Business Services is a voting member of PJM.

PJM uses 17 committees to manage planning and operation of the grid and related functions. PJM has designated the Members Committee (MC) and the Markets and Reliability Committee (MRC) as "senior committees." The MC offers guidance related to safe and reliable operation of the grid, operation of a competitive power market, and preventing members from unduly influencing PJM operations. The other PJM committees deal with specific areas, each is under the guidance of the two senior committees. Of the non-senior committees, three operate as permanent "standing committees." These include the Market Implementation Committee (MIC), the Operating Committee (OC), and the Planning Committee (PC). The other committees include:

- Audit Advisory Committee
- Enhanced Liaison Committee - Capacity Performance
- Finance Committee
- Liaison Committee
- Market Monitoring Unit – Advisory Committee
- Nominating Committee
- Security & Resilience Advisory Committee
- Subregional Regional Transmission Expansion Planning (RTEP) Committee - Mid-Atlantic
- Subregional RTEP Committee - Southern
- Subregional RTEP Committee - Western
- Transmission Expansion Advisory Committee
- Transmission Owners Agreement-Administrative Committee.

ACE has membership on the Mid-Atlantic version of the Subregional RTEP Committees. The chart in Appendix A displays the relationship among the committees that guide PJM's operation.

4. *Affiliate Electricity Sales to ACE*

ACE does not own or operate any supply resources, but purchases its power supply through New Jersey's BGS Auction process. The BGS auction process serves as the principal forum for the purchase of energy by the State's EDCs, including ACE. The BGS process operates under a statewide auction manager with oversight by a contractor working on behalf of the BPU.

With the merger of Exelon and PHI, affiliates of ACE occupy very strong positions in the market for electricity in which ACE must buy. The same is true in the Maryland and Delaware, where Liberty provides auction oversight services to the public service commissions who oversee auction processes. Exelon, through its Exelon Generation business, plays a large role in regional energy production. A regular participant in the BGS Auction process, this ACE affiliate has had great success in winning blocks of load to serve in New Jersey. We examined the history of ACE BGS purchases and Exelon's similar sales in other states.

New Jersey's Electric Discount and Energy Competition Act of 1999 (EDECA) requires the State's EDCs to use a BGS process for power supply. Since 2002, the four (4) EDCs have used a system run by an auction manager and overseen by a consultant to the BPU. The two auctions performed provide for supply to the primary customer types:

- Basic Generation Service – Commercial and Industrial Energy Pricing (BGS-CIEP) for larger customers
- Basic Generation Service Residential Small Commercial Pricing (BGS-RSCP) for smaller customers (formerly known as Basic Generation Service Fixed-Price until 2015).

The Auction Manager handles the bulk of the responsibility for securing power supply for the EDCs, including marketing the auction to prospective bidders, training and educating them, and providing them with the customer data with which to perform pricing analyses. A web-based bidding platform uses a Descending Clock Auction (DCA) approach to secure bids for serving load for all EDCs. The process has produced robust bidder participation and a diverse group of winners. Bid system security, key to ensuring auction integrity and even-handed competition between affiliated and unaffiliated suppliers, falls under the responsibility of the Auction Manager.

C. Findings

1. NUG Contracts

ACE's NUG contracts came into existence under the provisions of the Public Utility Regulatory Policies Act of 1978 (PURPA). The Act has required utilities to purchase power from non-utility generators through long-term, non-market-based bilateral contracts. Each NUG decides the level of energy output produced by its facilities, and ACE system operations controls the dispatch of its NUG purchases into PJM, the region's system operator. The contracts entitle the NUGs to fixed capacity prices and to energy prices tied to a coal price index. ACE pays NUGs a set contract price for energy, which ACE then dispatches into PJM on a competitive basis, securing the day-ahead and real-time locational marginal price (LMP).

The next table shows the pricing parameters associated with each of the three (3) NUG contracts recently in effect. The table's Logan and Chambers prices reflect September 2017 levels; the DRMI prices reflect those effective at that agreement's September 2016 termination. Logan and Chambers remain in operation under contract.

ACE NUG Contract Prices

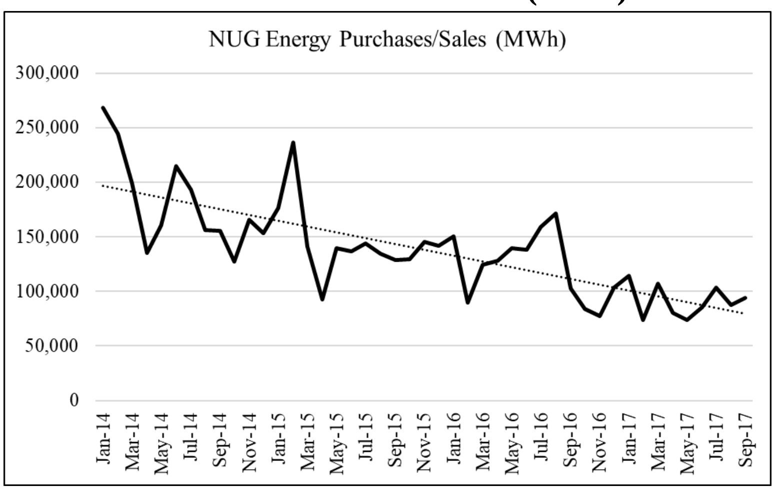
Facility	Energy $/MWh			Capacity	
	On-Peak	Off-Peak	RTC	$/MW Day	$/MW
Logan			[redacted]	[redacted]	
Chambers	[redacted]	[redacted]		[redacted]	
DRMI	[redacted]	[redacted]			[redacted]

Starwood Energy Group owns the 225 MW Logan coal-fired plant in Logan Township, NJ and the 262 MW coal-fired Chambers plant in Carney's Point, NJ. Their contract capacity levels comprise 200 MW and 188 MW, respectively, totaling 388 MW. Each of these two (2) contracts terminate in 2024. The ACE purchased power agreement for the DRMI 80 MW waste-to-energy facility ended in September 2016.

2. NUG Purchase and Sale Amounts

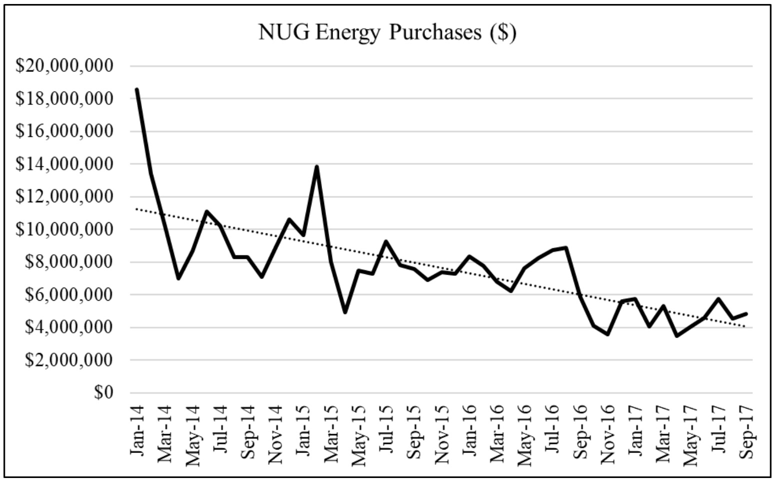
Between January 2014 and September 2017, ACE's NUG purchases declined significantly, with NUG contribution to energy and to capacity falling over that period. NUG energy deliveries dropped from 268,310 MWh in January 2014 to 93,800 MWh in in September 2017 - - producing a 65 percent decline. The next chart shows the energy decline graphically.

ACE NUG Purchases/Sales (MWh)



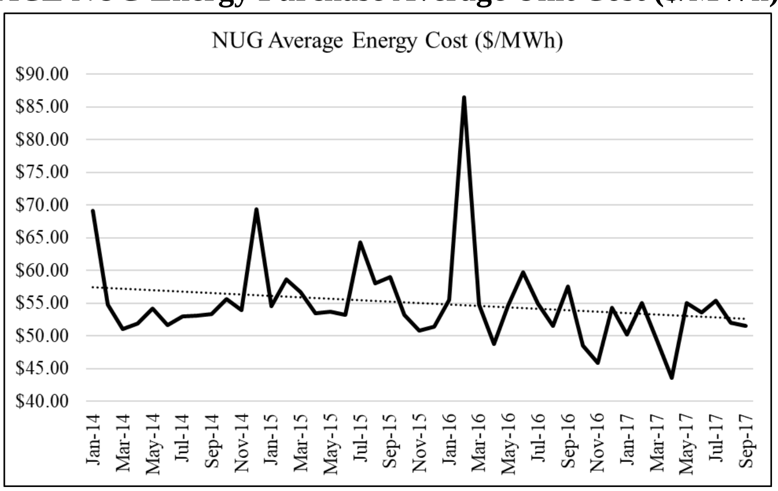
Falling energy output caused a corresponding decline in NUG energy purchase costs as well. The next illustration charts the fall 74 percent drop (from $18.5 to $4.8 million) from January 2014 to September 2017.

ACE NUG Energy Purchase Cost ($)



The equivalent price paid to the NUGs per MWh declined by 25 percent over this period, as the next chart shows. Thus, energy purchase costs have actually fallen more than their volumes have over this period (volume by 65 percent and costs by 74 percent).

ACE NUG Energy Purchase Average Unit Cost ($/MWh)



Unlike energy costs under the NUG contracts, capacity costs do not vary with the energy produced and sold to ACE. The contracts require fixed capacity payments, subject only to availability of the units, not their production levels. The next chart displays capacity payments.

ACE NUG Capacity Purchases Cost ($)

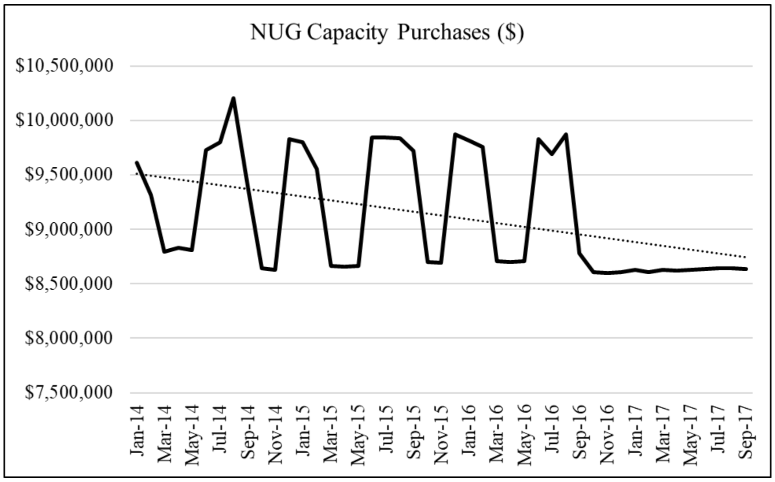
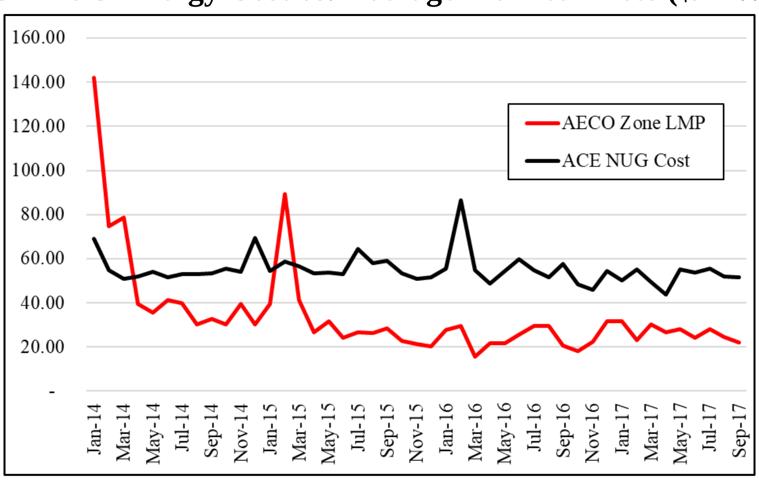


Figure 4 makes clear two key elements of capacity payments - - overall magnitude and monthly variability. Before DRMI's September 2016 PPA end, it provided capacity seasonally each year - - June through September (summer) and December through February (winter). The other two NUG sources provided capacity year-round.

ACE's sale of what it acquires from the NUGs has produced substantially less than its costs. The only market available, PJM's day-ahead and real-time energy market, offers far less than the over-market payments ACE must make under the NUG contracts. The next chart compares ACE's NUG costs per MWh to the real-time energy price in PJM's AECO zone.

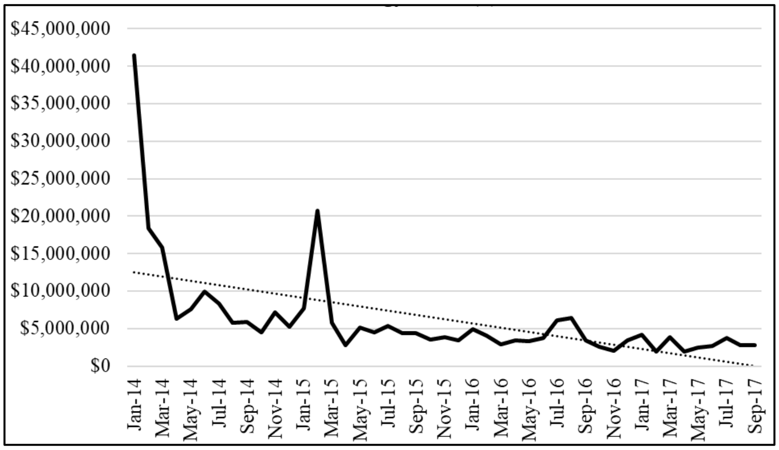
ACE NUG Energy Cost vs. Average Market Prices ($/MWh)



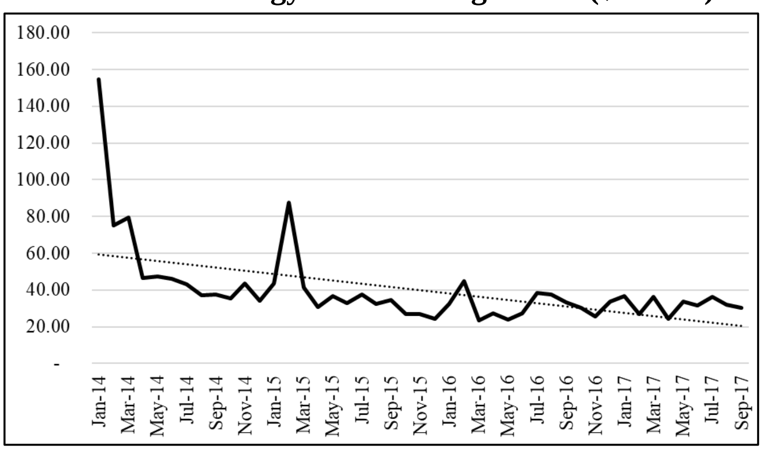
ACE's NUG cost almost always exceeds PJM's AECO zone real-time price, and does so by a substantial margin. Over the period depicted in the preceding chart, the average NUG cost of $55.41/MWh compared to a round-the-clock (RTC) AECO real-time price of $34.34/MWh. The difference has produced a 61 percent over wholesale market prices.

The next chart shows actual revenue from the sale of NUG energy into PJM. As expected, it declined with purchases, because the volume of energy from NUGs bought and sold are identical. The chart following the next one shows average prices ($/MWh) for sales by ACE of energy purchased from NUGs.

ACE NUG Energy Sales Revenue ($)

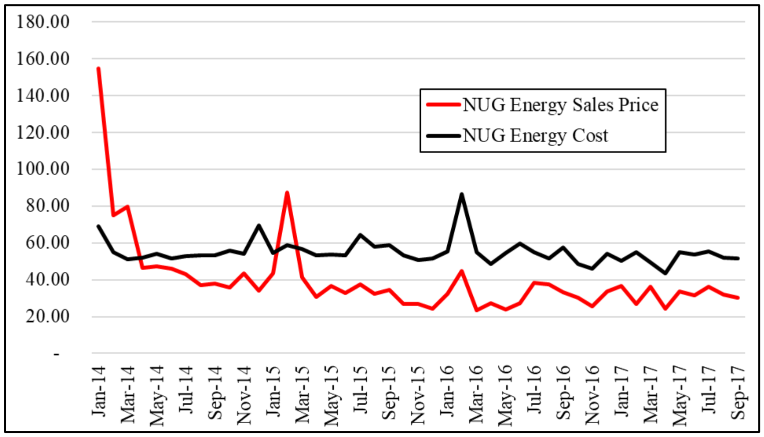


ACE NUG Energy Sales Average Price ($/MWh)

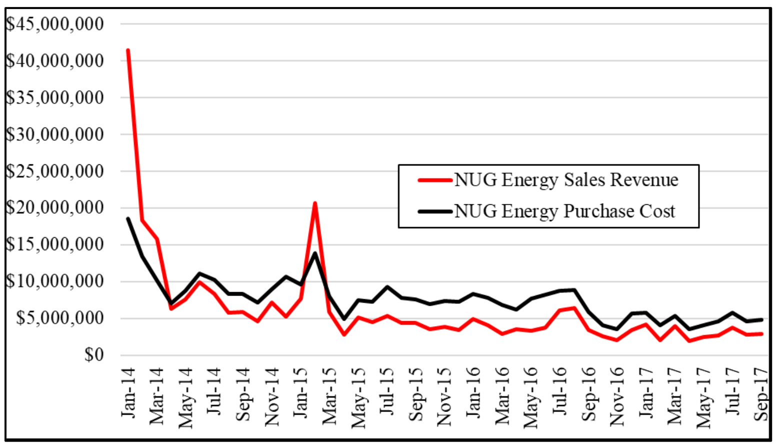


The next chart plots ACE's sale price for the NUG energy against the unit cost of the preceding figure. It illustrates the high premium associated with NUG energy. Over the course of the period shown, NUG purchased costs exceeded NUG sales prices by 22 percent, producing a loss of $63 million over this period, displayed in the second following chart.

ACE NUG Energy Cost vs. Sales Price ($)



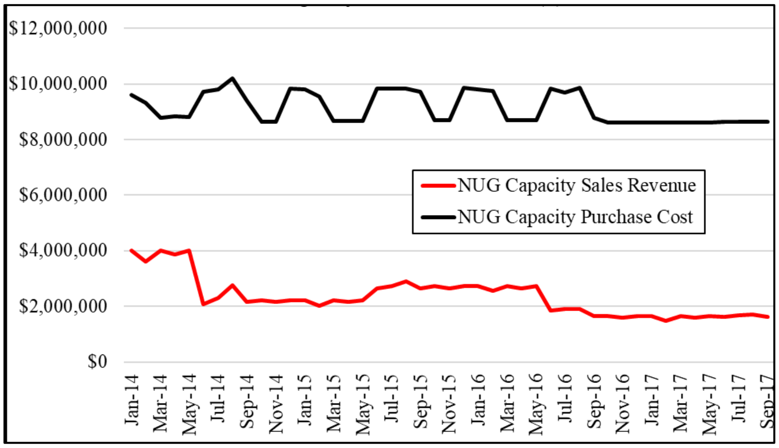
ACE NUG Energy Revenue vs. Cost ($)



Generally, therefore, energy from ACE's NUGs produces losses, except for the four months the preceding chart shows as producing profitable resales by ACE. The three profitable months in early 2014 resulted directly from the 2014 polar vortex, whose extreme low temperatures strained PJM resources, and produced high gas and power prices. The next year the market produced an extreme spike as well - - in February 2015.

In addition to the out-of-market energy volumes from the NUGs, capacity payments have also proven a substantial cost burden for ACE. The next figure displays revenues from ACE sales of NUG capacity in the market, comparing them to ACE costs for that capacity, paid to the NUGs. Capacity payments to the NUGs totaled $411 million over this period, compared to just $105 million in revenues. This 290 percent premium resulted in above-market capacity payments by ACE of $305 million.

ACE NUG Capacity Revenue vs. Cost ($)



3. NUG Pricing Validation

The only substantial control ACE has over NUG transactions lies in its audits of their invoices through *Quarterly NUG Control Reports.* ACE validates NUG invoices quarterly. These invoices cover the total cost of power supply, including energy and capacity payments. The process recalculates the NUG invoices to confirm and verify the invoiced amounts before payment and consists of the following steps:

- Collect supplier invoices
- Verify invoice amounts equal NUG bills
- Verify correct application of calculations
- Verify that proper approvals were obtained.

These straightforward steps provide a ready means for validating NUG contract payments.

4. NUG Contract Mitigation

The above-market pricing of NUG capacity and energy cost ACE a substantial amount of money. That cost amounted to about $368 million in above-market payments over the period of January 2014 through September 2017 ($305 million for capacity and $63 million for energy). We inquired into efforts to mitigate costs through negotiations with the NUG contract holders.

Management approached them in 2016 to discuss changes that might reduce above-market payments. Recognizing substantial moves by the U.S. Environmental Protection Agency (EPA) toward elimination of coal-fired plants through increasingly strict emissions constraints, including greenhouse gas regulation beginning in 2020, management thought that owners of coal-fired NUG facilities might consider changes to their contracts to address that risk. However, the 2016 elections produced results favorable to coal generation owners, and talks of contract mitigation ended unsuccessfully. Since 2016, no other efforts have been made to mitigate the NUG contracts, through the completion of our audit field work. Management's comments on a draft of this report, however, cited continuing discussions (addressed in quarterly NUG update reports filed by ACE with the BPU), beginning in 2018, regarding the Chambers and Logan PPAs.

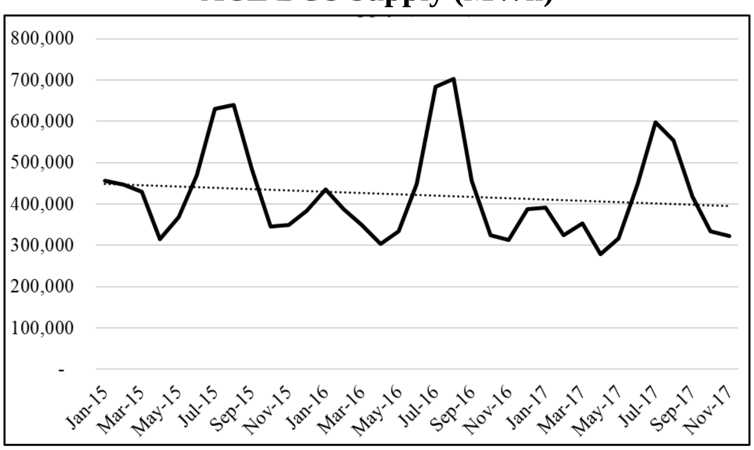
5. *New Jersey's BGS Auction Process*

All New Jersey EDCs have used a standardized process for procuring BGS supply since 2002. The BGS process employs a statewide auction, conducted each February, to procure needs for serving BGS customers. BGS service is available to retail customers who do not choose to take service from a third-party supplier or competitive retailer. Concurrently-run, but separate annual auctions procure supply for larger customers (BGS-CIEP) and for smaller customers (BGS-RSCP).

A third party manages New Jersey's BGS auction process. The process takes place over the course of several days each February, and incorporates a sophisticated descending clock auction (DCA) approach. In a DCA, suppliers compete to win blocks of load by agreeing to serve at a given price, which descends in subsequent rounds. As the price declines, suppliers drop out of the competition until the blocks offered by suppliers match the blocks required by the EDCs. This approach fundamentally differs from the sealed, single bid approach used in many jurisdictions. Under that approach suppliers must offer their best price without the pricing information disclosed by multiple round bidding. The DCA concept is designed to spur competition between suppliers to lower the winning block prices. The auction itself takes place only once per year over several days, but the overall process of NJ's BGS comprises a year-round endeavor. The costs of administering such a process can be substantially more than costs for administering less sophisticated sealed bid auctions. Those costs are added to the supplier costs ultimately borne by the EDCs' BGS customers. EDCs are invoiced by the suppliers monthly.

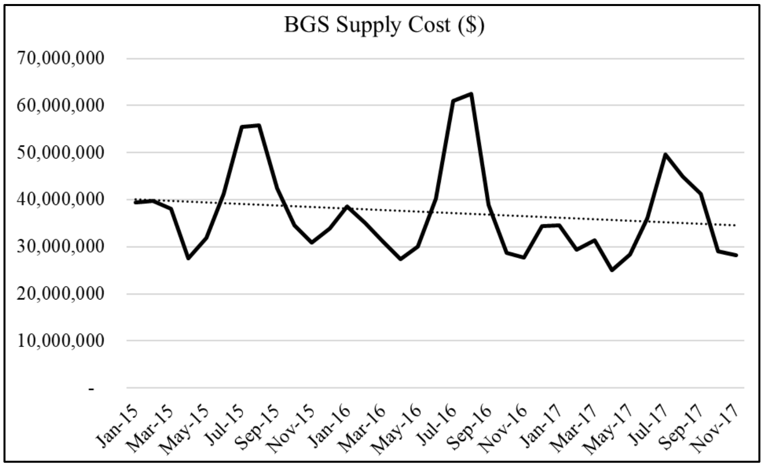
The BGS power supply is for full requirements, that is, to supply all of the power for the BGS load. Therefore, ACE requires no other power supply to serve its retail load. Supply procured for all classes being served by BGS comes under all-in supply pricing. It consists of energy, capacity, ancillary services, renewable energy certificates (RECs), losses and transmission service to the AECO zone. The next chart displays the volume of energy procured through the BGS auctions for service to ACE's retail customers.

ACE BGS Supply (MWh)



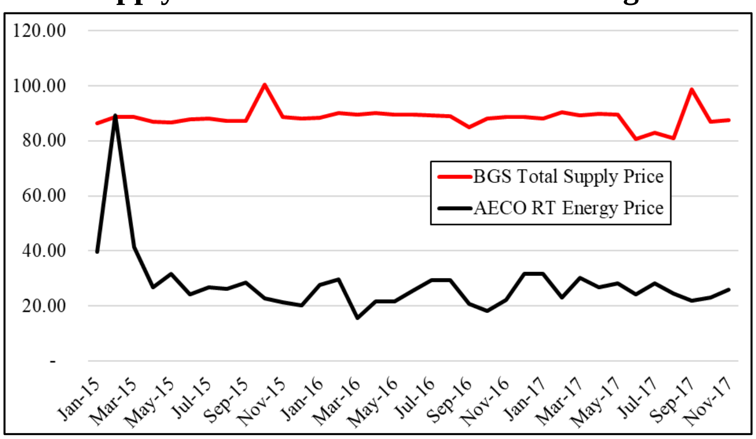
The required quantity of BGS supply, as expected, reaches its peak in the summer months, along with ACE load served. This pattern reflects normal circumstances for combined residential and commercial load. The next figure shows the actual cost of this supply, based on the BGS prices achieved at auction. The costs mirror the volumes shown in the preceding chart.

ACE BGS Supply Cost ($)



The following chart compares AECO zone market prices with the average prices paid for supply from the BGS auction. The results provide a general scale for the energy component of BGS supply, and show the relative stability of energy market prices over the period (polar vortex impacts notwithstanding). BGS supply includes energy, capacity, ancillary services, RECs, transmission costs, and losses, which account for the difference between the two lines.

ACE BGS Total Supply Price vs. AECO Locational Marginal Price ($/MWh)



6. *Quarterly BGS Control Report*

Each quarter, ACE validates BGS invoices. These invoices cover the comprehensive cost of power supply to serve ACE's BGS retail customers. The process recalculates the BGS invoices to confirm and verify the invoiced amounts before payment and consists of the following steps:

- Collect supplier invoices
- Verify that the calculations match the invoice and supporting documents
- Verify all calculations for all suppliers are correct
- Verify that proper approvals were obtained.

The process is audited by PricewaterhouseCoopers (PWC), and serves the purpose of validating the invoices for BGS supply.

7. *Customer Choice and Third Party Suppliers*

Customers who opt out of ACE's BGS do so by signing up with a third party supplier (TPS) for generation service. As displayed in Table 2, between 2014 and 2016, the number of customers opting for a TPS grew by eight (8) percent, from 88,411 to 95,369. This growth was driven exclusively by residential TPS adopters, which increased by 8,351. The other classes lost customers.

ACE TPS Customers

	Customers					
Type	2014	2015	2016	Avg	Delta	Delta %
Commercial	20,296	18,762	19,282	19,447	(1,014)	-5.0%
Direct Distribution	545	522	529	532	(16)	-2.9%
Industrial	99	98	100	99	1	1.0%
Residential	65,677	56,793	74,028	65,499	8,351	12.7%
Streetlighting	1,754	1,363	1,397	1,505	(357)	-20.4%
Transmission	40	41	33	38	(7)	-17.5%
Total	88,411	77,579	95,369	87,120	6,958	7.9%

Most large commercial and industrial users have already moved to retail marketers. Remaining competition focuses on retail customers who consume less energy on average. Despite the growth in total customers choosing a TPS, the total MWh served by a TPS declined by a substantial 10.2 percent, as displayed in the next table. Energy use per TPS customer declined as well, as shown in the table following that.

ACE TPS Energy

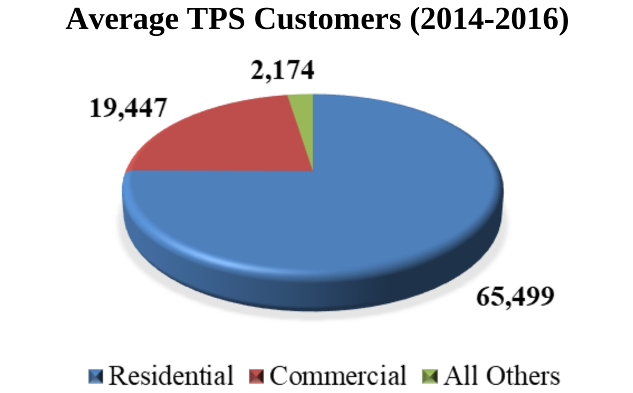
	MWh					
Type	2014	2015	2016	Avg	Delta	Delta %
Commercial	2,397,359	2,361,093	2,393,785	2,384,079	(3,573)	-0.1%
Direct Distribution	13,384	13,577	13,578	13,513	194	1.5%
Industrial	563,389	610,623	597,613	590,542	34,223	6.1%
Residential	748,202	624,666	629,542	667,470	(118,661)	-15.9%
Streetlighting	50,150	45,233	45,427	46,937	(4,724)	-9.4%
Transmission	999,242	707,280	603,566	770,029	(395,675)	-39.6%
Total	4,771,726	4,362,473	4,283,511	4,472,570	(488,215)	-10.2%

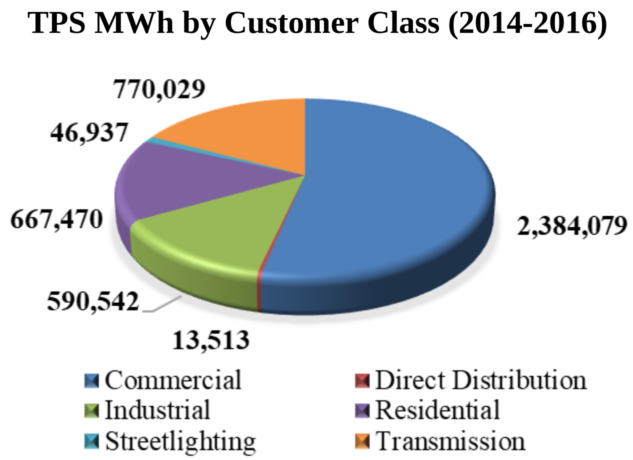
ACE TPS MWH per Customer

	MWh/Customer					
Type	2014	2015	2016	Avg	Delta	Delta %
Commercial	118	126	124	123	6	5.1%
Direct Distribution	25	26	26	25	1	4.5%
Industrial	5,691	6,231	5,976	5,966	285	5.0%
Residential	11	11	9	10	(3)	-25.4%
Streetlighting	29	33	33	31	4	13.7%
Transmission	24,981	17,251	18,290	20,174	(6,691)	-26.8%
Total	30,855	23,678	24,457	26,330	(6,398)	-20.7%

Interestingly, the number of TPS companies competing for retail energy customers in the ACE service territory grew 16 percent, from 56 to 65.

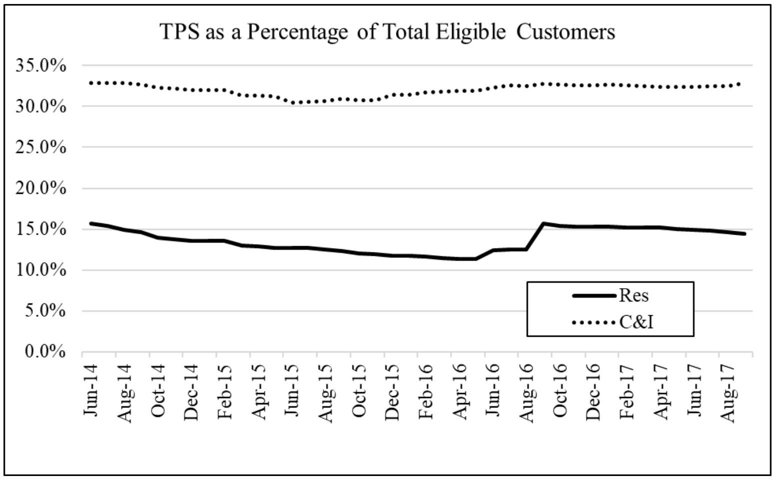
The next two figures show the makeup of TPS customers by customer class, in terms of both customer counts and the MWhs of energy that they represent. Figure 13 show that the majority of customers who switch are residential, making up 75 percent. Commercial customers make up another 22 percent, and the other 2 percent of TPS customers are all others. The majority (53 percent) of TPS energy served is from the commercial class, with almost equal parts from the residential, industrial, and transmission service classes.





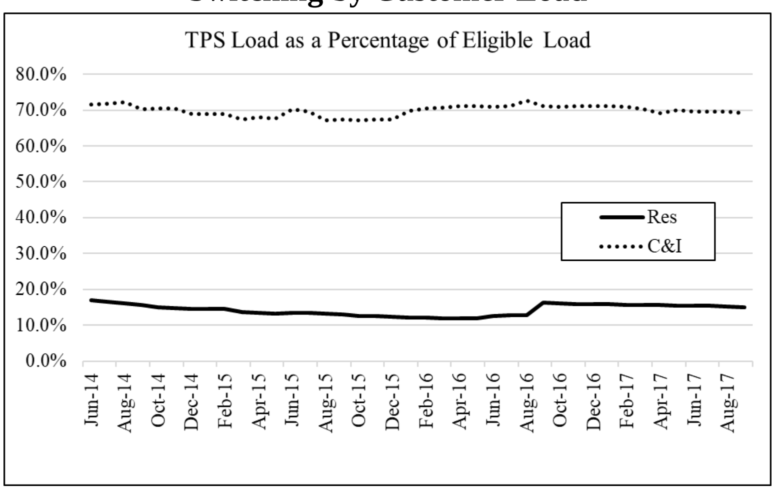
These relative shares are largely driven by the actual number of customers and their load size within each class. A more insightful way to examine switching from BGS to TPS supply is to look at the percentage of customers in each class that choose to switch. Figure 15 displays the percentage of customers switching to TPS supply by month for residential and the combined commercial and industrial (C&I) classes. As expected, a substantially higher percentage of C&I customers choose a TPS. Over this period, an average of 13.6 percent of the residential customers switched suppliers, as compared to 32 percent for C&I customers.

Switching by Customer Count



We also examined the percent of load that switched to a TPS. We found a significant difference for the C&I class. The next figure shows that nearly 70 percent of the eligible load from the C&I class switched. This indicates that, as expected, the larger loads were more likely to switch and had already been picked up by TPS providers. 14.3 percent of the residential load chose a TPS, only slightly higher than the number of residential accounts that switched. This is expected as there is less variance in energy use across the residential class as compared to C&I customers.

Switching by Customer Load



8. *Organization*

Responsibility for power supply and related functions reside at PHISCo, which provides support services to ACE and PHI's other EDCs - - DPL and Pepco. The Director of Energy Acquisition leads the power supply functions, under the Vice President of Regulatory Policy & Strategy. In addition to the Energy Acquisition group, Regulatory Policy & Strategy also includes functions residing under directors of Regulatory Services, Regulatory Services & Revenue Policy, and Pricing & Regulatory Services.

The Energy Acquisition group accounts for 37 of the Regulatory Policy & Strategy organization's roughly 101 FTEs. Below the director, 35 FTEs divide among groups under managers of Load Analytics (14), Energy Supply Services (4), and Energy Acquisition Operations (17). The key components of power supply relevant to ACE fall under the two managers of Energy Acquisition Operations.

Energy Acquisition provides a wide variety of services beyond those supporting ACE. For ACE, it plays a key role in administration of the NJ BGS Auction process, which is one of the most sophisticated Standard Offer Service auctions performed in the country. For DPL Delaware, it oversees a much more straightforward, third-party auction platform. For both Pepco operations (Maryland and DC), it oversees a more basic yet somewhat human resource-intensive sealed bid approach. Overall, the organization appropriately provides energy supply support services to its internal EDC customers, avoiding replication of resources that can be leveraged best and most economically to serve all EDCs.

9. Fuels Management

This section addresses RFP Task 3.2.9.D. New Jersey EDCs have participated in a BGS auction process for supply since 2002. The process employs a statewide auction, conducted each February, to procure needs for serving BGS customers. BGS service is available to retail customers who do not choose to take service from a third-party supplier or competitive retailer. A third party manages New Jersey's BGS auction process. ACE has no power generation and therefor has no organizations or activities performing fuels management for use in generation.

10. Pooling, Interchange, and Economic Dispatch

This section addresses RFP Task 3.2.9.E. ACE does not participate in pooling, interchange, or economic dispatch, given the operation of the BGS auction process for supply since 2002. ACE does, however, audit invoices associated with BGS supply and NUG contracts. A Quarterly BGS Control Report validates BGS invoices. These invoices cover the comprehensive cost of power supply to serve ACE's BGS retail customers. The process recalculates the BGS invoices to confirm and verify the invoiced amounts before payment. The process is audited by PWC, and serves the purpose of validating the invoices for BGS supply.

Likewise, NUG transactions are validated through Quarterly NUG Control Reports. The invoices cover the total cost of power supply, including energy and capacity payments to NUGs. The process recalculates the NUG invoices to confirm and verify the invoiced amounts before payment.

11. Affiliate Pricing of Goods and Services

Affiliate rules and regulations, the company's Cost Allocation Manual (CAM), and other governing documentation provide rules for costing outside purchases and sales involving affiliates. The company's pricing and costing policy between affiliates is subject to oversight by the state regulatory commission (NJ BPU) and the Federal Energy Regulatory Commission (FERC). The pricing requirements for transfer of services between ACE and other affiliates or purchased for sale on the open market by ACE must be priced at no less than the fair market value; transfers of services between a competitive affiliate company to ACE purchased for sale on the open market by the competitive affiliate company must be priced at no more than the fair market value. The determination of whether affiliate goods and service pricing has been discriminatory or above market rates associated with PHISCo and EBSC services to and from affiliates is discussed in Chapter IV, *Cost Allocation Methods*. We asked the company if there were purchases by ACE outside of the BGS auction process for 2014 through 2017. The company responded there were no energy and capacity purchases made by ACE outside the BGS auction process for those years. However, the company did state that there were purchases made by ACE based on contracts with NUGs. The purchases of NUGs are addressed and discussed in Chapter XIV, *Accounting and Property Records*.

12. Cost Allocation among Customer Classes

ACE's Purchase Power Agreements (PPAs) comprise contracts under which ACE purchases power in the open market with NUGs. Management stated that all ACE electricity costs outside the BGS process are incurred through ACE's NJBPU-approved PPAs with NUGs. ACE recovers NUG costs through a tariff rider, Non-Utility Generation Charge (NGC). This rider provides for the recovery of the costs above the market payments. The market payments are defined as the PPA payments made by the company, less the revenue received from the sale of NUG energy and capacity in the open market such as the PJM which is the Mid-Atlantic region power pool.

The market payments made costs are allocated to the customer classes when the NGC rate filing is completed each year. The market payments are adjusted for any over or under recovery (revenues-costs) of cost true-up from the prior year. Additionally, the invoices received from the wholesale suppliers to ACE for the purchased costs for Basic Generation Services are segregated into RSCP and CIEP customer invoices. However, when the BGS Reconciliation rates are filed, the net over or under recovery costs are allocated to each rate class for the RSCP and CIEP rate categories. Since these costs are in total, the costs need to be allocated to the different customer rate classes to determine the rate to charge each class of customer. The company provided the following process used to allocate costs to the customer classes:

> *The costs are allocated based on forecasted sales for the rate recovery period. The forecasted sales are grossed up for the applicable rate class categories line loss factor. Each rate class' allocated factor of the costs is calculated by taking the applicable calculated sales over the total sales for all classes for the applicable rate recovery period. The costs are then allocated by these factors to develop the NGC rate that will be charged to each customer class.*

We secured from management work papers showing costs allocated among customer classes. We reviewed and analyzed the allocation of costs settlement worksheets and calculations provided.

Management uses no documented procedures to support the allocation of purchase costs among customer classes, but the allocation calculation used to allocate costs to customer classes forms part of ACE's annual NGC reconciliation and update filing with the NJBPU. Management noted that any rate adjustments and supporting calculations proposed in the annual filings are reviewed and approved by the NJBPU. The NJBPU reviews the process used to allocate costs to customer classes, and approves or disapproves the rates during the rate filing review. We found the process used to allocate costs to customer classes appropriate. We reviewed the NJBPU Orders finalizing ACE's 2014, 2015, 2016 and 2017 NGC rates.

13. PJM Participation

a. PJM Committee Interface Procedures

Exelon's PJM Committee Interface Procedures lay out specific guidelines for participation in the many PJM committees. The document outlines a "coordination and communication protocol" between Exelon and PJM. The process is ostensibly designed to ensure that Exelon's positions reflect input from the appropriate affected stakeholders within Exelon. It also lays out guidelines for ensuring that Exelon's representatives on PJM committees remain well informed and prepared for their roles.

Section 1.2.1 sets forth the key provision affecting ACE input. It provides that, "Positions on issues affecting Exelon's interests are properly developed with input from affected internal stakeholders and are effectively advocated at PJM meetings." This interface procedure element allows for ACE input, but makes clear that Exelon develops a single, Exelon position. Therefore, in cases where ACE or PHISCo provides (or has the ability to do so) has opposing views, they may not come before the PJM committee involved. However, this approach does parallel PJM membership voting rights, which give only the parent company a vote. Subsidiaries like ACE or PHI are non-voting affiliate members of PJM.

Each PJM committee includes an Exelon representative. Exelon has also assigned to each an Exelon Internal Team Lead charged with internal review of committee undertakings and channeling communications on PJM issues. A PJM Issues Council (PIC) SharePoint repository houses documents related to each task or committee endeavor.

Representatives of the MC and MRC and other employees from the array of Exelon affiliates in PJM form a Tariff Review Team. This team provides representation of ACE on key PJM issues. The process falls under the Transmission Strategy and Compliance organization. Exelon also lays out guidelines for external communications related to PJM initiatives. Procedures cover guidelines for external communications and ensure compliance with PJM's Code of Conduct for committee participation. Ultimately, Committee Representatives support a united Exelon position.

b. ACE Representation on PJM Committees

With over 40 committees, task forces, and other groups in PJM, Exelon employees play a role in many facets of PJM. However, we found notable that ACE-level employees serve as representatives on no full committees but rather on only three lower-level subcommittees: the Relay Testing, System Restoration Coordinators, and Transmission and Substation. While important, these assignments highlight the limits of ACE involvement in higher-level committees.

Exelon's PJM Committee Interface Procedures set a policy of including all internal stakeholder input in PJM-related committee issues, but it has limited ACE membership to just these three (3) subcommittees. ACE would be better served to have participation in other committees in addition to the three subcommittees of which it is currently a member.

c. FERC Form 715-Related Transmission Requirements

FERC Form 715 (Part 4) - Transmission Reliability Guidelines outlines the processes by which ACE must operate is transmission system. The form notes that ACE is subject to reliability standards set forth from several entities, including the North American Electric Reliability Corporation (NERC), ReliabilityFirst Corporation, and PJM.

In addition to the external reliability standards, ACE's internal standards include the following:

- Thermal Requirements for normal and contingency conditions at specific load levels for transmission assets
- Reactive Requirements that outline voltage ranges
- Stability Requirements that require ACE transmission planning to conduct stability studies to NERC specifications
- Other specifications.

These requirements ensure that ACE's customers achieve a reasonable level of electric system reliability. This structure has been designed to regulate ACE's transmission operations; it therefore serves to ensure that ACE's customers benefit from its adherence. The PJM Committee Interface Procedures help to ensure that ACE is represented in Exelon dealings with PJM. ACE's FERC Form 715 requirements are specifically assigned to ACE.

14. Affiliate Electricity Sales to ACE

a. New Jersey BGS-RSCP Auction - - ACE Affiliate Purchases by New Jersey EDC

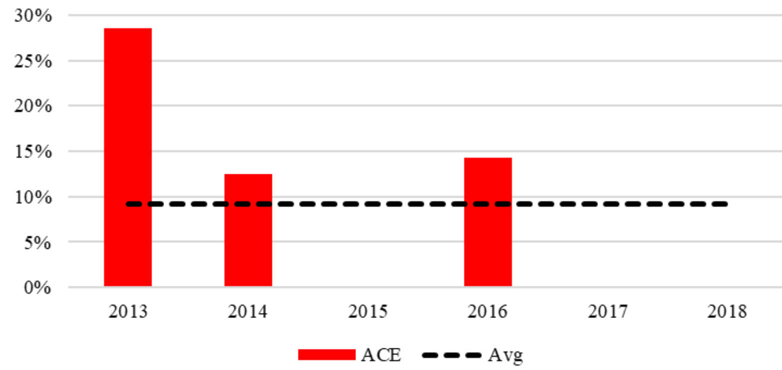
We reviewed the load awarded to Exelon Generation (affiliated with ACE as a result of the 2016 merger) over the period of 2013-18 and summarized the results in the following table. It displays the percentage of RSCP blocks won by Exelon Generation over this period and displays the average percentage of the blocks won by Exelon Generation in the period.

Exelon RSCP Blocks Won, by NJ EDC

EDC (Buyer)	2013	2014	2015	2016	2017	2018	Avg
ACE	29%	13%	0%	14%	0%	0%	9%
PSEG	11%	21%	10%	0%	14%	14%	12%
JCPL	22%	20%	10%	17%	13%	30%	19%
RECO	0%	50%	0%	100%	100%	0%	42%
Total Avg	**17%**	**21%**	**9%**	**9%**	**15%**	**18%**	**15%**
Non-ACE Avg	**15%**	**22%**	**10%**	**9%**	**18%**	**20%**	**16%**

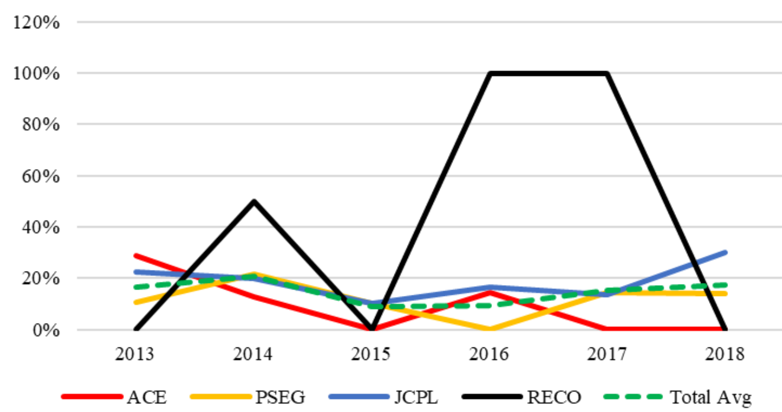
Exelon Generation's share of ACE supply won has declined significantly, from a high of 29 percent in 2013 to 0 percent in 2018. The next table shows the numbers of ACE blocks won over the period - - an average of nine percent. Exelon Generation won significantly more (an average of 15 percent) of the blocks of load in the state as a whole (16 percent of the non-ACE RSCP load).

Exelon-Supplied ACE RSCP Blocks



The next figure displays Exelon Generation's share of each New Jersey electric distribution company blocks secured through BGS auctions by year. ACE has bought less RSCP power from Exelon Generation than the state's other EDCs have. Additionally, the size of Exelon Generation's contribution to the ACE supply mix has declined.

Exelon RSCP Blocks by NJ EDC



b. <u>Exelon's Residential/Small Commercial Sales to PJM EDCs</u>

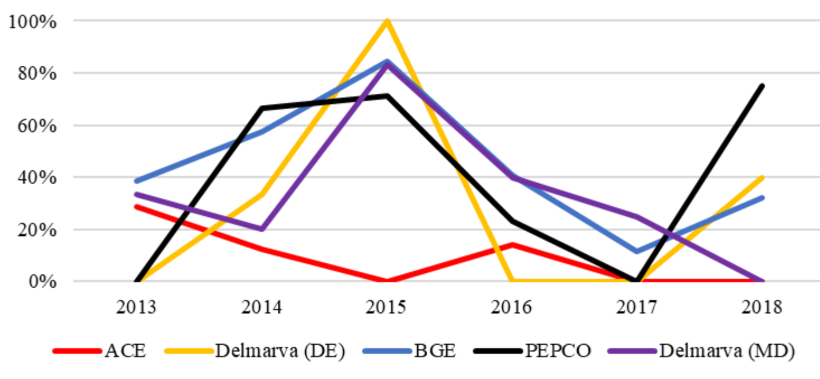
We also examined the success Exelon Generation has attained in Maryland and Delaware auctions over the same period. These states release auction results by winner and block type. Their utilities also operate in PJM and attract many of the same suppliers that participate in New Jersey BGS auctions. The next table displays the percentage of RSCP blocks won by Exelon at ACE and at four other Exelon affiliates in Delaware and Maryland. It also displays the average percentage of the blocks won by Exelon in the period.

Exelon RSCP Blocks in Other States

State	EDC (Buyer)	2013	2014	2015	2016	2017	2018	Avg
NJ	ACE	29%	13%	0%	14%	0%	0%	9%
DE	Delmarva	0%	33%	100%	0%	0%	40%	29%
MD	BGE	38%	58%	85%	41%	12%	32%	44%
MD	PEPCO	0%	67%	71%	23%	0%	75%	39%
MD	Delmarva	33%	20%	83%	40%	25%	0%	34%

As noted above, Exelon's role in ACE's supply has declined. The next figure compares the amount that Exelon supplies to ACE to what Exelon supplies to its other delivery utilities in those two states. The figure shows that ACE buys less RSCP power from Exelon than its other affiliates do, by a significant amount. Additionally, the role that Exelon plays in the supply mix to ACE has declined in recent years.

Exelon RSCP Blocks in Other States



The best evidence of the objectivity and integrity of the New Jersey BGS process lies in its structure, controls, and execution, which our recent BGS audit for the BPU demonstrated. Moreover, the data depicted above confirms that evidence, showing no indication that Exelon achieves advantage in bidding for ACE load. The amounts are either on par with or are less than those amounts in New Jersey as a whole and at Exelon's Maryland and Delaware utility operations.

c. New Jersey BGS-CIEP Auction - - ACE Affiliate Purchases by New Jersey EDC

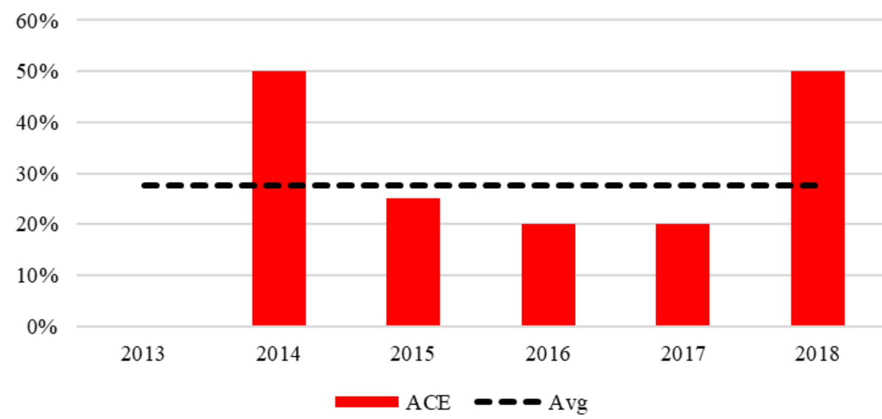
In addition to RSCP, ACE also procures its CIEP supply through the BGS Auction. We also has reviewed the CIEP load awarded to Exelon over the period of 2013-18. The next table displays the percentage of CIEP blocks won by Exelon over this period, and displays the average percentage of the blocks won by Exelon in the period.

Exelon Generation CIEP Blocks by NJ EDC

EDC (Buyer)	2013	2014	2015	2016	2017	2018	Avg
ACE	0%	50%	25%	20%	20%	50%	28%
PSEG	7%	7%	15%	31%	16%	8%	14%
JCPL	14%	38%	43%	38%	0%	42%	29%
RECO	50%	100%	100%	100%	0%	100%	75%
Total Avg	**10%**	**22%**	**27%**	**33%**	**12%**	**24%**	**21%**
Non-ACE Avg	**11%**	**20%**	**27%**	**35%**	**11%**	**21%**	**21%**

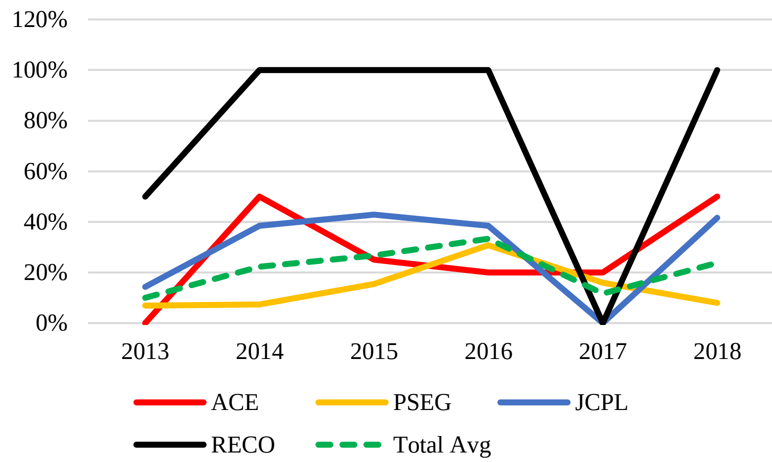
Over the course of this timeframe, Exelon Generation's role in ACE's supply has varied, from a low of 0 percent in 2013 to 50 percent in 2018. The next figure shows changes in numbers of blocks, which averaged 28 percent for the period. By comparison, Exelon won an average of 21 percent of the CIEP blocks of load in the state as a whole, and 21 percent of the non-ACE CIEP load.

ACE CIEP Blocks Served by Exelon



The next figure displays Exelon's share of each LDC's blocks won at auction by year. ACE has received about the same percentage of CIEP from Exelon as JCP&L and significantly less than RECO, but at twice the rate of PSE&G. The numbers for PSE&G, by far the largest buyer, bring down the average substantially.

CIEP Blocks by NJ EDC



d. <u>Exelon Large Commercial/Industrial Sales to PJM EDCs</u>

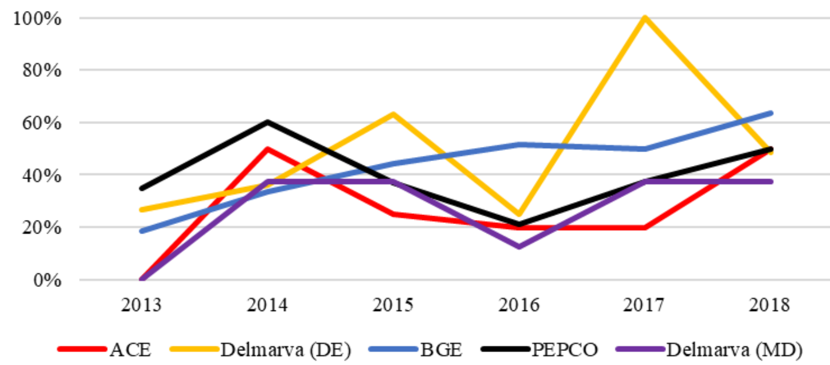
Our examination of auction results for large customers in Maryland and Delaware produced the following table of CIEP blocks won by Exelon at ACE and at four other Exelon affiliates in Delaware and Maryland.

Exelon CIEP Blocks in Other States

State	EDC (Buyer)	2013	2014	2015	2016	2017	2018	Avg
NJ	ACE	0%	50%	25%	20%	20%	50%	28%
DE	Delmarva	27%	36%	63%	25%	100%	48%	50%
MD	BGE	18%	33%	44%	52%	50%	63%	43%
MD	PEPCO	35%	60%	37%	21%	38%	50%	40%
MD	Delmarva	0%	38%	38%	13%	38%	38%	27%

Exelon's role in ACE's supply has generally increased, but has fluctuated year to year. What is most interesting, however, is the relative amount of Exelon CIEP supply at ACE when compared to the other four affiliates. The next figure shows Exelon's share of each of Exelon's affiliate LDC's CIEP blocks auctioned by year in Maryland and Delaware. The results indicate that ACE buys less CIEP power from Exelon than its other affiliates do, by a significant amount, with the exception of Delmarva Maryland (the two companies average about the same).

Exelon CIEP Blocks in Other States



This data gave no reason to question the objectivity or integrity of New Jersey acquisition processes. The amounts are on par with or are less than those amounts in New Jersey as a whole and at Exelon's other affiliates in Maryland and Delaware.

e. Process

As our recent examination of the New Jersey BGS process for the BPU found, auctions are well-designed, controlled, and executed, with the Auction Manager serving effectively as the primary provider and manager of the BGS auction functions, from pre-bid qualification and bidder training to bidding to declaration of winning bids. The BPU has also retained an outside consultant, presently an economic consulting firm, to provide oversight of BGS processes. This firm has provided a comprehensive review of BGS processes (employing a standardized checklist of required and expected activities, behaviors, and results), which it has documented in a formal report issued after each yearly auction. The firm's review and its report provide an appropriate source and level of review of BGS activities.

The Auction Manager's staff comprise the sole source of telephone communication in those limited cases where required. Moreover, the Auction Manager records all calls. These methods reflect a best practice, and minimize the risk that a caller will learn inappropriate information about the auction. New Jersey's bid day communications protocols exceed those of other jurisdictions about which we have meaningful information. Call recording in New Jersey stands as a particularly noteworthy feature among those that maintain the integrity of the bidding process.

The markets relevant to New Jersey, equally true in the remainder of the mid-Atlantic region, include affiliates comprising some of the nation's largest generating companies, holding significant generating capacity. Effectively monitoring their bid activity comprises an essential element in ensuring process integrity and best costs for customers. We also consider it necessary to design and employ an even-handed credit and other qualification processes as well. Discrimination in credit qualifying or failing to hold confidential the financial and other information about those who compete with EDC affiliates would threaten fair competition and price optimization substantially.

The New Jersey Auction Manager performs testing to identify potential behavior that may warrant further investigation. The nature of the New Jersey bidding process also makes it appropriate to test for collusion among unaffiliated bidders as well. The Auction Manager's testing considers this need. When an indication of a potential problem arises, the Auction Manager investigates the history of bids more thoroughly under the guidance of an "academic auction expert" standing by onsite in the Auction Managers Newark bid room.

Additionally, the Auction Monitor uses a "checklist" for the RSCP and for the CIEP auctions, as prescribed in detail by the NJ BPU. It includes a detailed checklist whose components conform to BPU requirements. The comprehensive and detailed checklists enable the Board Consultant to report directly on all aspects of the auction in an organized and easily-communicated manner. The components range from pre-auction communication with bidders, preparation of bidders, security, and how the process went. Complemented substantially by the checklist, the BPU's monitoring process gives it key information appropriate for its regulatory oversight of the BGS process. The combination of a well-run auction and a comprehensive monitoring checklist provide for a system that is void of affiliate issues, which is borne out in the results that show no advantage to ACE affiliates in the bidding process.

D. Conclusions

In addition to the conclusions below, see also Chapter VI, Conclusions 1 and 2 from Liberty's audit BGS Auction Administrative and Other Related Expenses of New Jersey EDCs which bear upon issues associated ACE's allocation of costs associated with the BGS auction process.

1. ACE is compelled to procure energy and capacity from two remaining NUG resources, whose prices far exceed the market, and will continue 2024. *(See Recommendation #1)*

One of the three NUG contracts in effect has expired during, leaving two (2) remaining contracts. Over the audit period, above-market NUG payments totaled more than $400 million over market-based prices. The burden of NUG contracts was lightened by the end of the DRMI contract in 2016, but remains substantial. While this is largely out of ACE's control, it may be possible to negotiate a settlement with the NUG owners that can mitigate the magnitude of the above-market payments.

To date, PHISCo (on behalf of ACE) has been unsuccessful in reaching an agreement to negotiate buyouts of the above-market NUG contracts with the two remaining suppliers. As we finished audit field work, no discussions were underway, but management's comments on a draft of this report indicated that they have begun and continue, but so far without success. Pursuit of NUG contract mitigation is warranted. Every month of NUG contract purchases represents a burden to ACE customers due to the price far exceeding PJM's market prices for day-ahead and real-time energy purchases.

2. ACE is obligated to procure supply for full requirements for its BGS customers through New Jersey's BGS auction process and, accordingly, has no other power supply functions.

The power supply process at ACE is run by the NJ BGS auction process, a sophisticated, mature, and well-run process. ACE has no control over the process, other than auditing bills to ensure proper payment.

3. The process by which ACE validates and audits the power supply related invoices is simple, yet effective and adequate.

ACE runs a quarterly process for validating and auditing bills associated with both the BGS auction process and the NUG contracts. The process are established and documented. The approach is simple and effective. The process is itself audited on a regular basis.

4. ACE is largely indifferent to customer choice through TPS companies. As an EDC, ACE has neither control nor interest in "competing" for customers.

ACE procures its power through the BGS auction, and delivers the power in a regulated wires business that does not face any risk from TPS competitors.

5. The process used to allocate costs to customer classes is appropriate.

ACE purchases power in the open market with NUGs based on ACE's PPAs approved by the NJBPU. Market payments are made by the Company, with costs then allocated to the customer classes when the NGC rate filing is completed each year. When the BGS Reconciliation rates are filed, the net over or under recovery costs are allocated to each rate class for the RSCP and CIEP rate categories.

We verified the process by reviewing the settlement worksheets provided by the company. We found the process to be the basis in which costs are allocated to the customer classes. Also, the NJBPU reviews and approves the allocation of costs among customer classes as part of the filing requirements during the NGC rate filings.

6. PJM's committee structure is highly interactive and inclusive and ensures that no members achieve unfair advantage, helping to ensure that ACE plays on a level playing field.

As a member of PJM, ACE and its parent Exelon and its other PJM affiliates are important members with varied respective stakeholders. The very structure of PJM's committee framework fosters an approach to system-wide optimization and inclusion.

7. Exelon's PJM committee interface procedures are comprehensive and detailed, but focus on a common Exelon position. *(See Recommendation #2)*

ACE's parent, Exelon, has developed a detailed manual for participating in PJM committees. One key component is the goal of identifying and soliciting input from all key internal stakeholders, which would include ACE where applicable. However, the position on each issue that is promoted is not necessarily in ACE's best interest, but rather Exelon's. It would be useful to track PJM issues from an ACE perspective, logging the inputs from ACE in Exelon stakeholder initiatives related to PJM committees and noting the ultimate Exelon vote on those initiatives.

8. ACE's service on PJM committees is limited to lower-level committees, without representation on key PJM policy committees. *(See Recommendation #3)*

ACE is included as a stakeholder per the PJM Committee Interface Procedures, but ACE employee representation on committees employees is limited to lower-level subcommittees. ACE representatives are not the Exelon representatives of any of the key committees within PJM. This may represent a shortfall in ACE's ability to become involved in policy issues that affect it.

9. ACE's FERC 715 filing further ensures protection of ACE customers.

ACE's FERC Form 715 requirements are specifically assigned to ACE, and require detailed reliability-related specifications. This set of standards helps to ensure that all Exelon EDCs, including ACE, meet reliability standards regardless of representation on committees by the specific affiliates.

10. ACE's affiliated purchases for RSCP and CIEP supply indicate no areas of concern that its affiliates receive unfair advantage.

ACE BGS auction purchases for residential and small commercial customers come from a variety of suppliers, one of which is its affiliate Exelon Generation. The portion served by Exelon represents less than Exelon's portion of load served at all other New Jersey EDCs.

ACE purchases for large commercial and industrial customers also come from a variety of suppliers, including Exelon Generation. The portion served by Exelon (28 percent on average from 2013-18) is somewhat higher than the 21 percent for all EDCs combined. However, this is largely driven by the fact Exelon serves a relatively small amount of CIEP load at PSE&G, the largest buyer of CIEP supply. Compared to Exelon-owned EDCs in Maryland and Delaware, ACE's Exelon-supplied CIEP load is relatively small.

11. ACE's procurement processes and systems successfully inhibit the potential for non-competitive and illegal behavior by affiliates and other suppliers.

ACE participates in New Jersey's BGS procurement process, which we have recently examined for the BPU and found well-designed to promote robust bidder participation under processes, methods, and controls sufficient to ensure an objective procurement process that gives no advantage to suppliers - - affiliated or not. The process is established and comprehensively run by a third party auction monitor. Security and process rules ensure that untoward behavior by bidders and suppliers is not feasible. Further, post-auction reviews are designed to identify any such behavior.

E. Recommendations

In addition to the recommendation below, see also Chapter VI, Recommendations 1 and 2 from Liberty's audit BGS Auction Administrative and Other Related Expenses of New Jersey EDCs which bear upon issues associated ACE's allocation of costs associated with the BGS auction process.

1. Re-engage in efforts to negotiate the mitigation of above-market NUG contracts. *(See Conclusion #1)*

It may be possible to negotiate a settlement with the NUG owners that can mitigate the magnitude of the above-market payments. ACE should continue negotiations with Starwood Energy. The deliverable is a clear set of alternatives and a clear sense of timing for pursuing them. While successful mitigation may be onerous and even unlikely, a concerted effort to pursue it represents time and resources well spent.

2. **Provide a regular report to the NJBPU on PJM issues on which ACE is an internal Exelon stakeholder.** *(See Conclusion #7)*

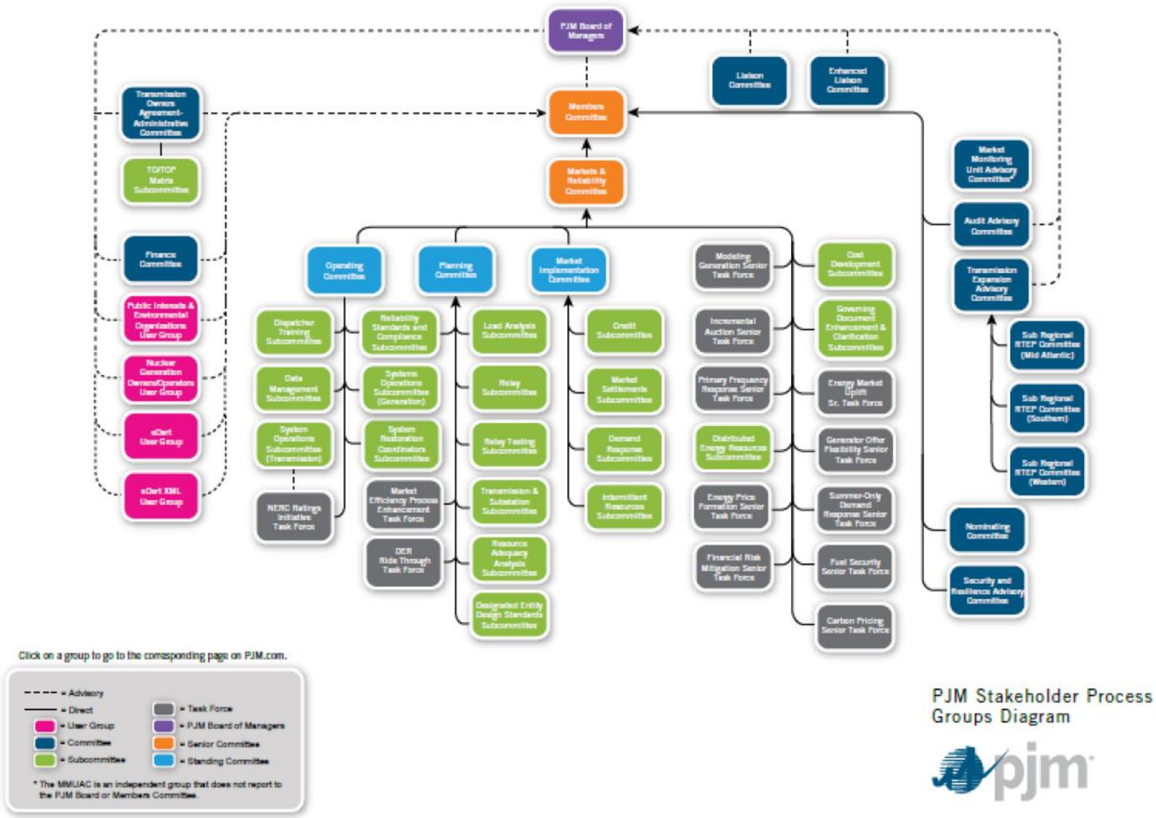
ACE should be required to track PJM issues from an ACE perspective, logging the inputs from ACE in Exelon stakeholder initiatives related to PJM committees and noting the ultimate Exelon vote on those initiatives. In this manner, the NJBPU can monitor the effects of Exelon decisions on ACE on PJM committee matters.

3. **Expand representation by ACE representatives on key PJM committees.** *(See Conclusion #8)*

With a role on key PJM committees, ACE employees may have more influence on policy issues within PJM that affect ACE and its customers. We would exclude ACE-level participation on the two Senior Committees (Members Committee and Markets & Reliability Committee). However, Exelon should consider ACE participation on one of the three Standing Committees. In particular, either the Operating Committee or the Planning Committee may be a good fit, given two factors: the current subcommittees in which ACE participates report to those committees; and ACE line of business (wires) is directly affected by the actions of those committees, and not so by the third Standing Committee, the Market Implementation Committee.

One factor that may contribute to the limited role of ACE in PJM committees is the sheer number of affiliated EDCs under the Exelon parent company. This has the potential for competing interests by and between affiliates when not all companies can be on each committee. As such, Exelon should consider inclusion of ACE and its other EDC representatives on a rolling basis that enables ACE to be included in additional committees from time to time.

Chapter III Appendix: PJM Stakeholder Process Groups



Chapter IV: Cost Allocation Methods Table of Contents

Chapter IV: Cost Allocation Methods

A. Chapter Summary

We reviewed cost accounting processes, cost assignment methods and procedures, controls, and transaction paths involving transactions among affiliates from the time of the Exelon merger through 2017 and we inquired into changes expected for 2018 following PHI's transition to Exelon financial systems. We undertook specific reviews of assignment and allocation details through 2017. Those paths changed substantially following the merger with Exelon. PHI's pre-merger service company, PHI Service Company (PHISCo) has continued to provide a wide range of technical and operating services, as well as corporate and support services. However, consistent with plans that have existed since the merger, a number of corporate and support functions and the resources providing them have moved to Exelon's long-standing service company, Exelon Business Services Company (EBSCo).

We found industry-leading and effective systems for cost accounting, accumulation and distribution to and among affiliates; they have been accompanied by detailed documentation and transparency for the affiliates receiving services. PHISCo switched to Exelon financial systems in 2018. Systems before and following that change were appropriately designed to account for and process the charging of affiliate costs. We were able to trace charges back to source documents, finding all those we examined appropriately supported.

Our review of charging bases and factors found them appropriate, our testing found allocation factors and overhead calculations appropriate and in conformity with established factors. Management has employed adequate processes for charging affiliate costs. However, PHISCo and EBSCo continue to use different allocation factors for many of the same service types that each provide. The two service companies also use different general allocators. These differences should be examined and reconciled, leaving only differences that have a sound foundation under cost causation principles and recognizing the fact that they have been subjected to scrutiny in different jurisdictions by regulators who may have different views on such principles.

Consistent with generally prevailing utility holding company practice, a cost allocation manual (CAM) and service agreements describe the EBSCo and PHISCo services and methods and factors for charging them. These documents provide for directly assigning costs for service transactions that solely benefit particular affiliates, like ACE. They also provide a series of factors for allocating the costs of service transactions that benefit multiple recipients. However, the CAMs used across our audit period, while providing sufficient documentation of cost assignment procedures, lacked sufficient documentation of cost allocations to ACE from EBSCo. The documentation does not provide sufficient information about allocation methods and procedures.

PHISCo and EBSCo both support maximizing the use of direct charging versus the use of less direct measures of cost causation. However, their performance does not suggest effectiveness in meeting that goal. A disproportionately low portion of service company costs to ACE have come under direct charging. Moreover, the proportion of costs directly charged to service companies has fallen significantly since the time of Liberty's last audit of PHISCo for the 2009 to 2011 period (as high as 36.5 percent in 2009 compared to an average below 20 percent for the period of the present audit). The portion charged under the method least correlated with causation, the general allocator, is very high. Management needs to determine and address reasons for excessive use of the general allocator, and respond with clear, effective measures to increase substantially the proportion of costs charged directly and by more directly cost-causative allocators.

The level of documentation and training provided to assist employees in ensuring controls over the initiation of affiliate transactions and the assignment of costs has become less comprehensive following the Exelon merger. Management should restore more of the detail provided and move closer to the approach that PHI had employed.

Time keeping systems and methods comprise a central element of effective management of affiliate charging and allocation. Those systems have provided capabilities and controls that support accurate time reporting, but the Exelon system's use of a default cost assignment mode tends unduly to discourage direct assignment of labor costs from the service companies. Procedures for recording and charging expenses are effective. Exelon's default time charging option should be replaced with a fully positive time reporting process.

B. Background

Our examination of cost allocation methods began with a review of cost accounting processes and cost assignment methods and procedures, and the systems and processes controls associated with the various paths through which costs for affiliate goods and services flow. We examined the transaction categories, paths, and amounts by which costs are exchanged among affiliates in ways that affect ACE directly or indirectly, identifying the goods and services provided among affiliates. We documented the various transaction flow paths. We also assessed the adequacy of policies, procedures, and activities associated with costs assignment and allocation among affiliates to comply with the standard of arm's-length dealing and regulatory requirements, including pricing policies, time and expense recording, assignment of common support roles to personnel, and affiliate agreements.

C. Findings

1. Affiliate Transaction Paths

The Exelon merger created substantial changes in the transaction paths among affiliates of ACE:

- A new service company, EBSCo, which had served the broad and large range of Exelon affiliates (utility and not) and which would provide increasing levels of corporate support services to the PHI companies
- Movement of remaining PHI non-utility business operations to the non-utility sector of Exelon, completing a process that PHI had begun before the merger to focus more on its core utility business operations.

The principal impacts of these changes for ACE have arisen from:

- Significant charges and allocations, many of them through PHI and then to ACE, from EBSCo

- Elimination of non-utility customers of PHISCo, which continues as a primary provider of affiliate services in support of ACE technical, operations, customer-service, and (to an extent diminished by growth in EBSCo services) corporate and support services.

Management of Exelon and PHI began to plan the integration of staffing and operations of the two service companies before the merger, which ultimately lead to the transfer to EBSCo of some service functions PHISCo had provided to and for ACE. In the months following the merger closing, these transferred services came to include a variety of treasury, investor relations, supply, tax, audit, legal, insurance, and IT system activities. The transaction paths or cost flows from PHISCo and EBSCo to ACE result from the various utility operational and support services PHISCo provides and bills to ACE and other affiliate PHI utilities, and the administrative, management and support services EBSCo provides to Exelon and the Exelon affiliates.

PHISCo operational and support services include:

- Centralized operational services that support customer service, regulatory, engineering, asset management, and construction management activities
- Embedded support services such as legal services, human resources, finance, government affairs, corporate communications, and executive services.

EBSCo administrative, management, and support services include:

- Corporate governance services - - finance, corporate strategy, government affairs, and risk management
- Core shared services - - information technology, supply chain, legal services, human resources, security, and real estate.
- Utility-focused corporate governance and oversight function, facilitating collaboration and best practices among the utilities, and directed by the CEO of Exelon Utilities, reporting to the parent Exelon CEO, and managed by a senior team employing a number of executives.

The support ACE receives from the group under the CEO of Exelon utilities takes more the form of governance and oversight, provided through the following groups:

- Strategy & Policy - - a group given the new mission of developing an Exelon-wide 10-year strategy for the utility operations, which Exelon describes as “a big part of Exelon’s future growth engine”
- Finance - - linking this new strategic plan with financial and business plans for Exelon’s utility operations, including budgets, earnings, rates, and rate cases
- Operations - - governing day-to-day utility performance through performance measurement and the peer group process and managing multi-utility projects
- Transmission and Compliance - - strategy, planning, and operational governance to optimize transmission assets and manage NERC and FERC compliance, and physical security of facilities system-wide.

ACE also receives services from and provides services to other affiliates in addition to the services the two service companies provide to ACE.

An operation as large, diverse, and complex as Exelon's (further complicated by the use of multiple service companies operating in the same overall functional areas, but with distinct roles and responsibilities) requires comprehensive, well-designed and effectively controlled methods for charging, assigning, and allocating costs among affiliates. Exelon's generation and marketing business make significant sales to ACE through the New Jersey BGS process. Excluding the costs of those purchases, between 94 and 95 percent of affiliate costs borne by ACE came from the two service companies in the 2015 – 2017 period. Including the power and energy purchases still leaves service company costs accounting for 79.0 and 81.8 percent of ACE affiliate costs in 2016 and 2017.

2. Cost Allocation Manuals

CAMs typically provide the primary documentation of methods and procedures for charging, assigning, and allocating costs among affiliates. Exelon uses them in conjunction with other documents that form parts of its overall affiliate costing documentation. These other documents include Service Level Agreements and the EBSCo Associate Transaction Procedures Manual, which became pertinent to ACE operations as part of PHI since the 2016 merger with Exelon.

PHI changed its CAM in connection with the merger. The "2015 PHI CAM" governed in the period immediately preceding the merger. In the first full calendar year after the merger, the "2017 PHI CAM" replaced the 2015 version. The main bodies of these two documents provide an overview of the corporate structure and affiliates, general cost accounting principles, and cost accounting, accumulation, and distribution methods. The CAM's attachments include service agreements between the service companies and their affiliate "customers". These service agreements provide most of the information about the cost allocators used and the services to which they apply. The main bodies of the 2017 CAM remained substantially the same as its 2015 predecessor. The principal difference came through the addition of several references to Exelon and its subsidiaries, an updated PHI organization chart, and brief descriptions of the Exelon affiliates. The more significant differences between the 2015 and 2017 CAM versions come in the attachment to the 2017 CAM of the EBSCo General Services Agreement and an exhibit showing an organization chart of the Exelon legal entities.

PHI's 2017 CAM states that PHI and Exelon follow similar general costing principles. These principles include the use of fully distributed costing, which combines both direct costs and overheads, and a three-tiered costing approach:

- Directly ***assigning*** charging costs determined to benefit a single affiliate, with charging accomplished by recording the costs involved directly on the receiving affiliate's books and records
- Directly ***charging*** costs for work between a single providing and a single receiving affiliate using a fully-costed rate
- ***Allocating*** costs from service company to multiple receiving recipients (when the costs cannot be directly assigned or charged) using allocation factors specified in the service agreement.

The substantive provisions of the main bodies of the 2015 and 2017 PHI CAMs address only PHI entities as service recipients. The CAMs state (described more fully in the Cost Accounting

Process section below) that PHI used SAP as its enterprise resource planning (ERP) system through 2017 - - changed in early 2018 to an Oracle-based platform.

3. Service Agreements and Allocation Factors/Ratios

The agreements that govern service company services and costs list and describe those provided and the factors used for assigning and allocating their costs. The PHISCo Service Agreement comprises an exhibit to both the 2015 and 2017 PHI CAMs. The 2017 CAM adds the EBSCo General Services Agreement as another exhibit, and a separate exhibit describes the EBSCo service areas and cost assignment methods. Both CAMs provide additional information about the ways that PHISCo accumulated and distributed costs to the PHI affiliates during the operation of the SAP system, which ended as 2018 began.

a. <u>PHISCo</u>

The PHISCo Service Agreement became effective on January 1, 2006 with a five-year term. The parties extended it for another five years, modifying it on January 1, 2011. A second five-year extension and modification followed on January 1, 2016. Appendix A to the Service Agreement lists the services provided, the methods used to assign or allocate the costs of each service, and the policies and procedures used to accumulate the PHISCo costs. Appendix B defines the factors and ratios used for cost allocation. The Service Agreement extension that became effective in 2016 made only minor modifications. The most significant change came with elimination of the Utility Marketing Services functional category and the incorporation of a few residual services from that category into External Affairs. The factors used to allocate the costs of those residual services remained the same.

PHISCo has allocated the residual costs of service-providing groups on the basis of allocation ratios or Statistical Key Figures (SKFs) described in PHI's Service Agreement. These SKFs take the form of specific ratios developed to charge client companies for internal services within defined allocation factors. For example, the allocation factor, Customer Ratio, is used to allocate customer services costs to more than one affiliate or for various types of customer services provided. This is accomplished by using different SKFs within the Customer Ratio grouping. For example, the SKF – CSTMR2 allocates shared meter services costs, while SKF-CUSTMR allocates resource management planning and analysis costs, and SKF-CSTM12 allocates costs for DPL/Pepco customer care.

PHISCo procedures for services clearly identifiable as benefiting a single affiliate called for directly assigning the costs of those services to that entity. Deducting those charges from the total costs of each PHISCo cost center leaves a residual amount, which, at the end of each month, gets distributed to the affiliates through allocations. The objective was to fully distribute monthly to the PHI affiliates all costs that PHISCo has incurred, thus zeroing out the service company's costs each month. For the costs charged through allocation, management determined the amount to be allocated to each affiliate using allocation factors deemed to be drivers of those costs. Examples of these ratios include number of employees, number of customers, and operations and maintenance expense. The ACE portion of total customers of the three PHI utilities is about 30 percent. Therefore, if PHISCo bears $1 million in costs of a certain kind (*e.g.*, customer bill print, as a hypothetical example) for the three PHI utilities combined, and the established allocation factor is number of customers, ACE would bear $300,000. Were PHISCo to prepare a special bill insert solely to address a Delaware requirement applicable only to Delaware customers, the costs of doing so would go entirely to Delmarva.

The Service Agreement defines the allocation factors, specifying those applicable for each specific service type. One must combine the factors with the number of benefitting entities (not always the same) to produce the specific percentage of the costs to be borne by each. The assigned factor and the number of benefitting entities produce the ratios used to allocate costs for the activities associated with each factor. Take for example a service PHISCo performs jointly for Delmarva and ACE, but not for Pepco. If the applicable factor is number of customers, ACE would get allocated 6/11th, reflecting its 600,000 customers versus Delmarva's 500,000. Note that this and the preceding example use approximations, not the more precise numbers that drive calculations of PHISCO cost allocations.

Most allocation factors use a single cost driver; such factors reflect the ability of management to identify a single, at least somewhat direct causal relationship. For a number of cost sources, such identification is not considered realistic. In such cases, PHISCo costs allocations occur under a combination of factors. Such composite factor allocators are often called "general allocators" in the industry. Through 2017, PHI used a "Two Factor" general allocator, which averaged: (a) operations and maintenance costs and (b) gross property, plant, and equipment. Thus, if a recipient's share (among the entities being allocated the costs involved) of the former category is 30 percent and its share of the latter is 50 percent, it would bear 40 percent of the two-factor-allocated costs.

b. <u>EBSCo</u>

The January 1, 2001 EBSCo General Services Agreement became effective for ACE through execution on March 24, 2016. This agreement states that the parties to the agreement, including ACE, shall pay EBSCo at no less than cost for services EBSCo renders. The agreement includes two schedules providing general information about cost allocation methods.

Schedule 1 lists a set of causally-based allocation ratios grouped into six categories: Revenue Related, Expenditure Related, Labor/Payroll Related, Units Related, Assets Related, and Composite. Schedule 2 of the EBSCo General Services Agreement lists the services provided to affiliates and the categories of ratios that can be used to allocate the costs of various categories of these services. The 2017 PHI CAM also incorporates an Exhibit 3, entitled "2017 Exelon Business Services Company Service Areas & Cost Assignment Methods." Exhibit 3 offers additional information about the services EBSCo provides beyond the simple lists of services in Schedule 2 of the General Services Agreement and it provides additional information about the ways for assigning costs, including some more specific information about the allocators used. The Service Level Arrangements and Service Catalog apply in determining the services provided and the charging bases for their costs.

EBSCo also employs a general allocator for those costs not amenable to use of these causally-based factors. Its general allocator uses a three-factor, "Modified Massachusetts Formula." This formula averages the ratios of: (a) gross revenues, (b) total assets, and (c) direct labor. The change to SAP did not affect the use of different allocators by the two service companies, although the new CAM in effect starting in 2018 increased PHISCo's use of the general allocator, as discussed below.

EBSCo directly charges and allocates the costs of some services provided broadly to PHISCo (*i.e.*, charges not directly assigned or allocated to PHI subsidiaries like ACE). PHISCo then passes them on through direct charge or allocations to the benefitting PHI affiliates through the same methods and factors PHISCo uses for the costs it directly incurs in serving the PHI utilities.

4. Non-Service Company and Inter-Service-Company Transactions

ACE receives some costs from other affiliates and charges other affiliates for some goods and services beyond those involving the two service companies, PHISCo and EBSCo. The main bodies of the CAMs describe the handling of such additional inter-affiliate charges. The charges include items like building leases, vehicle costs, stores procurement and handling, and the occasional, non-PHISCo-employee-provided services to other affiliates.

Non-service company inter-affiliate charges include the costs of:

- Labor-related services: limited situations in which the employee of an affiliate provides services to PHI utilities or vice versa. In these cases, the provider company charges the receiver company based on the full Activity Type Pricing (ATP)
- Materials: limited amounts for materials from inventory provided from one affiliate to another. The cost of these materials includes an overhead component to recover the cost of operating the storerooms
- Vehicles: those owned and maintained by the utility fleet departments made available to other affiliates
- Building occupancy costs: charges for employees of an affiliate using space in buildings owned by another affiliate, based on proportion of space usage
- Invoice payments: limited cases of convenience invoice payments of one affiliate for another. PHISCo makes most such payments.

The 2017 PHI CAM adds two other categories of non-service company inter-affiliate charges:

- Mutual assistance among the Exelon utilities pursuant to mutual assistance agreements.
- Other regulated energy-related agreements, including wholesale energy supply from Exelon Generation, the costs of which are priced at market or other regulatory approved prices.

5. Codes of Conduct

Prior to the 2016 Exelon merger, PHI maintained a Corporate Business Policies document. It incorporated sections addressing the need for compliance with regulatory requirements applicable to affiliate interactions. At that time, PHI also provided training for employees on these business policies, including sections that address the need for regulatory compliance and existence of and purpose for the CAM. Pre-merger, PHI also required certification of employee knowledge of these policies.

Exelon has made its generally applicable Corporate Code of Conduct available on the corporate intranet. Since the merger, this code of conduct has been the relevant one for the former PHI utilities (including ACE) and their affiliates. All active Exelon employees must undergo annual training on the content of Exelon's code, most receiving it through Exelon's internal electronic training system, known as the Learning Management System. The code and the training include requirements for affiliate interactions, including the need for the use of proper cost charging.

6. Cost Accounting and Charging Processes

The month-end closing process for the two service companies use defined accounting accumulation and cost-distribution methods and systems. Through December 31, 2017, PHISCo used SAP as its ERP to accumulate and distribute costs for the PHI affiliates. Exelon uses Exelon Performance System (EPS), an Oracle-based general ledger accounting system. PHI's accounting systems were integrated into Exelon's accounting system effective January 1, 2018.

a. PHISCo through 2017

Under SAP, PHISCo used ATPs - - standard activity-based rates per unit of service, to price goods and services directly charged to ACE and its affiliates. For example, for services charged on the basis of hours spent, while the individuals performing the activities charged time specifically, a standard overall hourly rate (not that of the individuals making the time entries) drove the charges. This would change after 2017.

These ATP rates included direct, indirect, and overhead costs. Management calculated the ATPs during the annual budget process that each cost center performed. These ATPs were then entered into SAP, monitored, and revised to ensure that costs were distributed properly to the cost centers. Overhead costs are calculated and included in the ATPs during the same budget process. The Accounting group reviewed the reasonableness of the assumptions used to calculate overhead rates.

PHISCo priced much of its work on the basis of time expended, as recorded. Prior to PHI's move to the EPS, SAP provided financial, cost accounting, FERC accounting and a module Cross Application Time Sheet (CATS) for time reporting entries. PHISCo's Intercompany Accounting group used an SAP cost-accounting module (CO) to accumulate and then to support distribution of costs to PHI entities. SAP used "cost objects" to capture costs and record the transactions on the Company's books. These cost objects took three forms:

- A cost center, not necessarily the employee's own
- An Internal Order number, used for specific, generally not regular work activities; *e.g.*, an audit of an individual affiliate
- A Work Breakdown Structure (WBS) designator, generally used for field capital or O&M work; *e.g.*, storm work.

Thus, cost objects included both departments or work groups (cost centers) and project or activity-based collectors (work orders and other items under the work breakdown structure PHI used to budget, manage, and control work on activities like capital projects). These cost objects provided a comprehensive list of activities that allow the accumulation of costs in a robust manner of ways, *e.g.*:

- Capital costs by project

- O&M costs to be assigned directly to individual service recipients
- Costs incurred for activities serving multiple entities and employing causal allocators
- For those costs, codes specific to the identity and number of the benefitting entities
- Costs to be apportioned pursuant to the general allocator.

Where required to support cost accumulation, accounting, assignment, and allocation, the system permitted breakdowns into internal orders, plant maintenance orders, and customer service orders, for example. The SAP cost-object structure thus provided an integrated approach to collecting costs, distributing them to affiliates receiving services, and regulatory accounting.

The PHI system employed through 2017 used five types of cost centers to accumulate costs:

- Resource Cost Centers – PHI used these cost centers to capture the costs of the "provider" cost centers for standard costs of resources available to perform work (*e.g.*, labor, operating expenses, and facilities, vehicles, and other assets). Resource cost centers collect costs incurred to provide a service to a client work group, which is referred to as the receiver cost center or B – Cost Center. For example, the IT department is the resource cost center that collects costs for providing IT support services to a client company. IT then charges the client company (the receiver cost center or B Cost center) the standard rate called ATP for the services provided.
- B Cost Centers – These resource cost centers capture expenses other than labor (*e.g.*, training and travel) associated with Resource Costs Centers, but not directly included in collection of Resource Cost Center costs billed by the hour of service rendered. They are collected under a billing cost center for allocation to multiple service recipients.
- Billing Cost Centers – These cost centers accumulate costs for products or services that will be charged to multiple recipients, thus requiring some apportionment among those recipients. It also covers costs different from those of the resource cost center. For example, when an employee spends time supporting a specific activity in a state containing more than one affiliate company and performs work benefiting each company, the employee time is directly charged to a billing cost center and allocated to cost objects in the two affiliate companies.
- Product Cost Centers – These cost centers accumulate costs associated with specific products. For example, SAP system costs were accumulated in a specific product cost center. The costs were then directly charged to the users of that system.
- Receiver Cost Centers – These cost centers accumulate direct charges and allocations to each receiving affiliate; they also provide segregation of costs for regulatory accounting purposes (for example, the cost of providing lobbying services are accumulated in a manner that identifies them as below-the-line cost for regulatory accounting and reporting).

After accumulating costs based on the foregoing process, management then distributed them. Through 2017, PHI used four types of transactions to record the distribution of costs from cost centers:

- Internal Settlement – This process transferred costs from orders to cost centers (expenses) or balance sheet accounts (capital costs) recorded on the books of each charged goods or services recipient.

- Cross Charging – This process charged a fully loaded rate (*e.g.,* ATP) for certain IT services provided within PHISCo by one cost center to another cost object (e.g., Accounting). This type of transaction could be recorded within the service company or charged to an affiliate company. Under cross charging, IT resources at the PHISCo level could charge another service company department, such as Accounting, which in turn can then include those costs in charges it makes to ultimate beneficiaries. Cross charges thus essentially involve interim charges to other service providers rather than to ultimate service recipients. When a department provides its services directly to ultimate recipients (*i.e.*, not through another provider who makes use of them to serve ultimate recipients), its costs can be charged or allocated to those recipients without passing through another provider.
- Assessment Allocation – This process distributed all service-provider residual costs not directly charged through allocations. It was designed to ensure a zero balance at each providing cost center; *i.e.*, the total of directly charged and allocated costs would equal the department's costs each month.
- Overhead – Overhead costs were built into the ATP rate, a standard activity-based rate per unit of service used to transfer costs from a cost center to an order, project or another cost center.

ACE and PHISCo employees directly charged their time, primarily to cost objects within ACE and PHISCo, respectively, using the time reporting system. System logic within each cost object determined the SAP company code and FERC account (used for regulatory reporting). Employees used a charge number provided to ensure accurate time reporting by specific activity. An added control supported the collection and reporting of costs as required for rate filings and reports. Costs from ACE's cost centers were mapped to the ACE FERC General Ledger and to ACE New Jersey Distribution, for example.

In addition to the various cost centers used to collect and distribute costs, unique cost elements described the types of services provided. Using the specific cost elements associated with the direct or allocated charges allowed management to breakdown the types of services within the departments and costs centers, and identify the nature of the services provided by PHISCo and EBSCo. This control aided the review of costs charged to affiliates when analysts reviewed monthly results.

b. Exelon (and PHI after Conversion from SAP)

EBSCo's accounting for the accumulation and distribution of costs relied on the Oracle-based EPS. EBSCo finance and accounting groups have responsibility for ensuring that affiliate transactions get recorded properly and adhere to applicable regulations. EBSCo Accounting and Finance reviews the costs prior to billing and the Operating Companies' finance groups review billed costs with explanations provided by EBSCo finance. EBSCo uses processes similar to PHISCo's for accumulating and distributing costs to ACE and its affiliates (such as costs centers and cost pools). Resource costs such as labor, material, and vehicles for services and activities are accumulated under cost centers and cost pools within EBSCo, after which defined methods serve to directly charge or allocate them to ACE and other affiliates. An EBSCo Service Catalog includes descriptions of these services and activities.

7. *Time and Expense Reporting*

a. Time Reporting

Prior to 2018, PHI used an SAP module (CATS) for employee time entry. Employees entered their time in quarter-hour increments (less, if necessary). The time sheets include fields for specifying cost objects, which PHI used to determine cost assignment and allocation, as described earlier. Employees with access to SAP generally enter their time directly into CATS. Otherwise, employees manually prepare time records for entry into the system by an approved Time Administrator. A designated Time Approver, usually the employee's supervisor or cost center manager, approves time entries for less senior personnel. Those at or above grade 13 can approve their own time. Procedures require time entry and approval for each pay cycle by designated payroll deadlines. Management maintains documents to assist employees in time reporting: a Payroll Time Entry and Approval Policy document and Time Reporting Quick Reference Guide and Time Code Combination reference sheets showing valid absence and attendance codes.

Beginning in 2018, Exelon employees (including PHI) enter time using the eTime system. Employees enter time into specified "codeblocks," which the Exelon accounting system uses to assign or allocate costs. Managers have responsibility for reviewing the timesheets of those they supervise. A series of Exelon job aids provides employees with information about time entry and performing tasks like entering time for holidays and editing codeblocks. Management also distributes to exempt employees an annual communication reminding them of their regulatory and other obligations related to time reporting.

b. Expense Reporting

Prior to 2018, PHI required employees to use corporate credit cards for business travel expenses, with a waiver exception available to those incurring small amounts and securing an approved waiver. Employees recorded expenses not charged to corporate credit cards using the Travel Expense Manager module of the SAP system to request reimbursement. Prior to gaining access to the Travel Expense Manager, employees are required to pass online courses on expense policies, guidelines, and reporting. Expenses require approval from a higher level of management. SAP also provided an online course on expense approval.

Exelon employs similar expense requirements. PHI employees use the Exelon system, after a transition from the previous PHI system as 2018 began. Exelon's web-based expense management system known as Concur Expense allows employees to electronically create expense reports for reimbursement and for superiors to approve the expenses. Exelon also provides documentation of expense policies and procedures, along with guidelines, training materials, and job aids available on an intranet site to assist in expense reporting.

8. *Billing and Settlement of Services*

PHISCo and EBSCo generate intercompany receivables and payables related to affiliate charges on a monthly basis. Both service companies issue electronic bills monthly, but ACE can request a physical copy. Transactions get recorded on both service company and recipient general ledgers. Service company costs charged to affiliates automatically generate intercompany receivables and payables within the accounting system, requiring no manual journal entries. The monthly bills include the client company and the cost of each service provided to the client company.

Through the end of 2017, PHI's corporate accounting used Intercompany Break Reports to confirm balancing of intercompany accounts, running these reports several times during the month-end close. The Intercompany Break Report provided a means to compare the PHI SAP data for intercompany account balances to Exelon's general ledger data. This process provided for monitoring and correction of PHI and Exelon intercompany transactions during the closing cycle.

EBSCo also prepares a monthly invoice report identifying all the services and products provided to each client company by type of service.

In some cases, some non-service company affiliates, such as Millennium for meter reading services and W.A. Chester for storm assistance services, bill ACE by submitting invoices to ACE. Accounts Payable processes these invoices as they do those from non-affiliates.

Through most of 2016, the PHI money pool provided the source for intercompany settlement of amounts due to PHISCo, using cash wiring. PHISCo's move in 2016 to Exelon's Treasury system (the Wallstreet Suite) led to its integration into that system. EBSCo's Cash Accounting group prepares intercompany settlement files based on each operating company's intercompany balances by affiliate and sends them to the Cash Management group within the Treasury department to settle the balances by the 15th of each month, using Exelon's Treasury system. Management still runs the Intercompany Break Report multiple times during the month-end close. This allows the operating companies to identify, address and correct any issues before the month-end close. Invoices rendered to ACE and other affiliates must be settled or paid within 30 days. No outstanding charges remain past the 30-day payment period.

9. *Cost Distribution Review Process*

The PHISCo Controller's department maintained, reviewed, and monitored processes for accumulating and distributing service company costs to ACE and its affiliates. PHISCo's Intercompany Accounting personnel have responsibility for controlling the establishment of all cost objects for billing service company charges, analyzing the reasonableness of charges, and evaluating reasonableness of monthly bills to ACE and affiliates.

Each cost center head and capital project manager reviewed monthly charges from PHISCo, or other affiliates, as did financial operations analysts. Discussions between service company (provider) and recipient company personnel took place before charging labor in the SAP system to determine the proper receiver cost object, giving consideration as well to regulatory reporting requirements for service company charges.

PHISCo implemented a refinement to its accounting coding, adding unique cost elements or account numbers to describe the types of services provided to PHI affiliates, including ACE. Financial reports from SAP, using the added definition, reflected the nature of the services provided by PHISCo and aided in monthly costs received by the client affiliates. The system supported drill down (the ability to view costs at a lower level of detail) of services provided to the specific PHISCo department, employee, and the number of hours charged.

Affiliate transactions also undergo review by the external auditors, an annual transactions review, CAM attestations and bi-annual PHISCo and annual EBSCO reviews by Internal Audit.

10. Our Testing of Affiliate Goods and Services Pricing

a. Calculation of SAP Rates and Overheads

EBSCo does not employ standard labor rates; it bills the actual costs of the person performing the service and entering the applicable time entry. PHISCo moved to this approach in 2018 (and away from its standard labor rates or ATPs) after moving to the Exelon financial system. We examined a sample ATP workbook for a different PHISCo cost center for each of the years 2015, 2016 and 2017. The workbooks include the supporting data for the overhead rates and the data used to calculate the ATPs. After examining workbook cost and data detail, we recalculated the overheads and ATPs to verify their accuracy. The three cost centers involved consisted of:

- For 2015 - - Cost Center 191 – Stores Atlantic (Supply Chain Delivery Storekeeper)
- For 2016 - - Cost Center 5562 – Asset Performance (Engineering Standards personnel)
- For 2017 - - Cost Center 343 – ACE Construction (Construction Coordinator, Trouble and service work, etc.).

The costs involved included labor costs, non-labor resources, and units of support (*e.g.*, numbers of work stations, vehicle counts, and facility square footage). Our recalculations verified the accuracy of the rates examined.

b. Direct Charge Testing

We reviewed the direct charging process used by PHISCo (using ATP while under SAP) and by EBSCo (using actual, not standard, labor rates). We began with the SAP report (Report #533) management used to verify zero month-end balances for all service providing (or "cost sending") cost centers. We also examined the Breakdown by Partner report, which includes the sending and receiving costs center costs from PHISCo to ACE. We selected Executive Management costs for 2015 and Information Technology costs for 2017 for detailed review, after we examined costs PHISCo accumulated by service category, and then charged or allocated to ACE. For EBSCo, we examined worksheets underlying Legal costs from 2017 and Audit costs from September 2016.

The reports and worksheets provided costs charged to PHISCo company and charged out to ACE, but we did not find the flow of costs from the service company to ACE supported by readily accessible source documents. Continuing work, however, did eventually succeed in tracing both direct and allocated costs charged by PHISCo to ACE to sources. We also succeeded in tracing total dollars charged to EBSCo and then charged to ACE and other affiliates from source documents, but not in the same detail as PHISCo provided. Despite the lack of support for dollars charged by EBSCo to ACE in the manner applicable for PHISCo, we were still able to satisfactorily trace EBSCo costs to ACE.

c. Allocated Costs Testing

PHISCo's month-end closing process closed out "residual" costs (those not directly charged or assigned) by allocating them to client companies under allocation ratios applied to defined collections of costs. Through 2017, PHISCo used SKFs, identified in the PHISCo Service Agreement to make such allocations. The PHISCo Service Agreement specified and defined 23 such SKFs. PHISCo switched in 2018 from the use of SKFs to individual allocation ratios similar to the EBSCo approach. The allocation of residual costs continues with EBSCo systems, but not by use of SKFs.

PHISCo's accounting system embeds these SKFs, which define the allocation factor, to which it was necessary to add the number of benefitting entities to determine each entity's percentage of the total (*e.g.*, customer numbers) it bore. The cost of using internal audit services provides an example. If all client companies were involved in an internal audit, PHISCo used a factor, allocating internal audit services to all companies; for internal audit services pertaining only to the operations of the three PHI utilities, PHISCo used a different factor to allocate internal audit services only to those three companies.

PHISCo implemented controls to ensure SKFs were calculated and applied correctly, including SKF updates (monthly, quarterly, annually or as needed), monthly review and sign offs of changes to the SKFs by responsible accounting personnel, retention of documents reviewed, and accounting group verification of clearing of all residual costs monthly.

A yearly PHISCo Costing Cross Reference workbook set forth each year's allocation ratios and associated SKFs. We reviewed the versions for 2015, 2016, and 2017. Schedule XXI (Methods of Allocation) of the PHISCo FERC Form 60 identifies ratio definitions, and describes the applicable SKFs and the numerators and denominators involved. We tested the following for each quarter of 2017 - - Customer Ratio, Employee Ratio, Gross Property, Plant & Equipment, and the Two Factor Ratio. Liberty recalculated these ratios with the data management provided. We verified that the formulas used for the ratios were consistent with the Service Agreement.

EBSCo similarly uses ratios to allocate residual costs, but does not use individual SKFs. EBSCo does use individual allocators to distribute costs to the specific entities benefiting from the services provided. EBSCo's General Service Agreement sets forth its allocation ratios. Examples of the factors it uses include revenues, sales (units sold), and number of customers.

The Company provided a list of the EBSCo 2016 and 2017 allocation ratios along with the supporting basis data and formulas used to determine the numerators and denominators. EBSCo used 35 and 53 allocation ratios, respectively, in 2016 and 2017 to allocate costs to ACE. (EBSCo used more allocators in 2017 than 2016 because it provided more services to ACE and other PHI utilities in 2017 as it continued consolidation of PHISCo and EBSCo). Liberty recalculated each allocator used in 2016 and 2017, finding them correct, based on the formulas and data the Company provided.

We tried to match allocation ratios as described in the EBSCo Service Agreement schedule to the actual ratios EBSCo used in 2016 and 2017, but could not do so. For example, we tried to match some of the 2017 ratios that use various types of expenditures to allocate costs. However, the Service Agreement only refers to a class of ratios it calls "Expenditure Related," many of which do not match the names of the actual ratios used. Also, the Service Agreement does not define how to calculate these ratios or precisely what types of expenditures should be included. We did not find the Service Catalog helpful in providing sufficient detail.

We stated above that PHISCo used SAP Report #533 prior to 2018 to verify the required zero balances for shared costs allocation and complete clearing upon month-end closing. Liberty reviewed the 533 Reports for June and December of 2015 and 2017 and for March and December of 2016. That review verified clearing to zero balances. Management stated that if there was a significant balance remaining in the sending cost centers the Intercompany Accounting group would investigate and resolve it. EBSCo compares the EBSCo income statements before and after allocations to determine if EBSCo has balances remaining to be cleared. After the clearing of balances from PHISCo and EBSCo Service Company's sending costs centers, EBSCo and PHISCo distribute taxes EBSCo and PHISCo in the current month, and distribute any residual tax balance in the following month.

d. Overheads

The ATPs include overheads, such as employee benefits, payroll taxes, and material and stores. Overheads are charged to the affiliate where the employee works. The rates are updated annually and may be changed more frequently if there are changes in assumptions used in calculating the rate.

EBSCo's overhead rates include employee related benefits such as pension, other post-retirement benefits (OPEB), medical, annual incentives and payroll taxes. EBSCo applies the overhead rates to base labor costs charged within EBSCo and then allocated to the affiliates as part of the fully distributed cost. Subject matter experts calculate and update the overhead and indirect cost rates on an as needed basis and submit the updated rates to the accounting department.

Liberty reviewed PHISCo overhead data for 2015, 2016, and 2017 and 2017 data for EBSCo. Liberty recalculated selected overheads, finding the calculations to be correct.

11. Services and Cost Trends

The tables provided in this section identify the services provided and associated dollar cost flows from the two service companies, PHISCo and EBSCo, to ACE and its affiliates. ACE also receives some costs from other affiliates and charges other affiliates for goods and services. These are also shown. The table includes cost trends for the years 2015, 2016 and 2017 of services, showing the amounts that are directly charged and indirectly charged (allocated).

a. PHISCo Costs to ACE

The next table shows the PHISCo functions providing services and the costs billed to ACE for the years 2016 and 2017. Note that this data focuses on charges to ACE, while other chapters addressing overall efficiency and effectiveness of corporate and support services have focused more on total costs of the functions shared by all three PHI utilities - - for reasons explained in those chapters.

PHISCo Services Provided to ACE

PHISCO Service Costs Charged to ACE						
Services Provided	**2015**	Percent	**2016**	Percent	**2017**	Percent
Executive Management	$ 146,090.00	0.10%	$ 191,245.00	0.1%	$ 148,672	0.1%
Procurement & Administrative Service	484,148	0.34%	365,829	0.2%	326,547	0.2%
Financial Services & Corporate Expen	2,445,379	1.71%	1,678,490	1.1%	1,191,982	0.9%
Insurance Coverage and Services	437,935	0.31%	488,584	0.3%	445,647	0.3%
Human Resources	428,602	0.30%	396,176	0.3%	393,795	0.3%
Legal Services	996,141	0.70%	698,347	0.4%	466,575	0.3%
Audit Services	137,438	0.10%	36,821	0.0%	-	0.0%
Customer Services	2,253,089	1.57%	2,207,719	1.4%	1,991,248	1.5%
Information Technology	5,114,382	3.57%	5,234,103	3.4%	5,137,788	3.8%
External Affairs	453,604	0.32%	484,319	0.3%	371,977	0.3%
Environmental Services	882,385	0.62%	851,573	0.5%	879,899	0.6%
Safety Services	169,021	0.1%	74,572	0.0%	85,512	0.1%
Regulated Electric & Gas Delivery	15,436,502	10.8%	16,579,186	10.7%	17,704,665	13.1%
Internal Consulting Services	518	0.0%	-	0.0%	5,577	0.0%
Interns	108,950	0.1%	133,506	0.1%	133,726	0.1%
Direct by Function	**$ 29,494,183**	**20.6%**	**$ 29,420,467**	**18.9%**	**$ 29,283,609**	**21.6%**
Executive Management	$ 9,785,724	6.8%	$ 15,021,252	9.7%	$ 5,891,607.5	4.4%
Procurement & Administrative Service	4,380,650	3.1%	4,596,348.9	3.0%	3,930,045	2.9%
Financial Services & Corporate Expen	8,960,218	6.3%	13,728,871.4	8.8%	12,366,874	9.1%
Insurance Coverage and Services	2,005,747	1.4%	570,675.4	0.4%	118,222	0.1%
Human Resources	11,103,621	7.8%	12,707,677.0	8.2%	7,320,346	5.4%
Legal Services	1,317,335	0.9%	661,267.5	0.4%	534,024	0.4%
Audit Services	707,712	0.5%	163,442.7	0.1%	-	0.0%
Customer Services	51,317,368	35.8%	46,798,425.6	30.1%	45,428,279	33.5%
Utility Marketing Services	200,497	0.1%	-	0.0%	-	0.0%
Information Technology	7,176,463	5.0%	7,802,608.8	5.0%	8,111,158	6.0%
External Affairs	1,899,467	1.3%	2,185,353.0	1.4%	2,563,247	1.9%
Environmental Services	952,082	0.7%	1,151,444.7	0.7%	1,185,234	0.9%
Safety Services	296,152	0.2%	331,235.7	0.2%	408,316	0.3%
Regulated Electric & Gas Delivery	13,301,919	9.3%	19,790,443.4	12.7%	18,081,085	13.4%
Internal Consulting Services	363,837	0.3%	339,645.3	0.2%	188,875	0.1%
Allocated by function	**$ 113,768,790**	**79.4%**	**$ 125,848,691**	**81.1%**	**$ 106,127,312**	**78.4%**
Total Services Billed	**$ 143,262,973**	**100.0%**	**$ 155,269,158**	**100.0%**	**$ 135,410,921**	**100.0%**
Inc/(Dec) from prior year	$12M, 8.4%	$(7.9M), (5.5)%				

Following the Exelon merger, services in the following areas (some in part, some essentially nearly totally) moved from PHISCo to EBSCo: Audit, Treasury, Investor Relations, Tax Support, Supply services, Legal Services, Insurance Administration, and IT system support. As a result of these service transfers, the associated costs for services billed by PHISCo to ACE decreased from 2015 to 2017 as shown in the preceding table. However, the total 2016 costs PHISCo billed to ACE increased approximately $12 million or 8.4 percent from the 2015 billed costs. Executive Management, Financial Services & Corporate Expenses and Regulated Electric & Gas Delivery services served as primary sources of this increase.

This 2016 increase in costs resulted predominately from a one-time allocation of merger costs in Executive Management services (executive compensation and severance from organizational changes), Financial Services & Corporate Expense (PHISCo tax allocation costs), and Regulated Electric & Gas Delivery (utility integration and depreciation costs). The 2017 cost decrease of $7.9 million or 5.5 percent from 2015 primarily resulted from the transfer of costs from PHISCo to

EBSCo. The decrease in allocated Human Resource costs arose from company policy changes for vacation accruals, offset by: (a) the increase in allocated merger compensation for executives, and (b) PHISCo tax allocation costs resulting from the Tax Cuts & Jobs Act of 2017.

The percentage of costs PHISCo directly charged to ACE in 2015 and 2017 increased slightly from 20.6 percent in 2015 to 21.6 percent in 2017 although there was a marginal percentage decrease in 2016. This change is attributed to one-time direct costs in 2017 related to executive compensation expenses in Executive Management that were related to the merger and to project support expenses to ACE in Regulated Electric & Gas Delivery. Overall direct charges from both service companies to ACE nevertheless decreased somewhat from 2015 to 2017. The largest service costs directly charged to ACE during this period involved Regulated Electric & Delivery and Information Technology.

Liberty compared the PHISCo billed services for 2015, 2016 and 2017 (presented in the preceding table) to the 2015 and 2017 CAM documentation for services to be provided. We could readily trace most PHISCo services identified in the Service Agreements included in the 2015 and 2017 CAMs to the services provided by PHISCo to ACE for 2015, 2016 and 2017. The PHISCo service agreements did not include one direct service (for Interns) PHISCo charged to ACE. These charges comprised an insignificant portion (.01 percent) of direct costs for each year. Management stated that these services came on as-needed basis for special or non-recurring events, such as merger and integration efforts.

b. EBSCo Costs to ACE

The next table shows EBSCo functions providing services and the costs billed to ACE for the years 2016 and 2017. Again, note that chapters addressing overall efficiency and effectiveness of the functions involved have addressed total costs of these functions for the three PHI utilities.

EBSCo Services Provided to ACE

Services Provided	EBSC Service Costs Charged to ACE											
	2016						2017					
	Direct	%	Indirect	%	Total	%	Direct	%	Indirect	%	Total	%
Finance	$ 465,430	23.3%	$ 3,638,854	27.2%	$ 4,104,284	26.67%	$1,694,243	38.5%	$ 4,390,696	14.7%	$ 6,084,939	17.73%
Inform. Technology			2,952,492	22.0%	2,952,492	19.18%	536,910	12.2%	14,854,917	49.6%	15,391,827	44.85%
Executive Services			1,575,251	11.8%	1,575,251	10.24%			2,132,662	7.1%	2,132,662	6.21%
Exelon Utilities			1,391,658	10.4%	1,391,658	9.04%			2,288,541	7.6%	2,288,541	6.67%
Legal Services	537,844	27.0%	423,032	3.2%	960,875	6.24%	767,213	17.4%	485,567	1.6%	1,252,780	3.65%
Supply Srv	250,013	12.5%	491,533	3.7%	741,546	4.82%	213,593	4.9%	1,332,504	4.5%	1,546,097	4.51%
Human Resources	737,451	37.0%	(13,666)	-0.1%	723,785	4.70%	1,184,314	26.9%	(16,846)	-0.1%	1,167,468	3.40%
Corp Strategy			604,242	4.5%	604,242	3.93%			853,093	2.9%	853,093	2.49%
Communications	2,783	0.1%	568,757	4.2%	571,540	3.71%			1,344,482	4.5%	1,344,482	3.92%
Reg & Govt Affairs			527,747	3.9%	527,747	3.43%			863,152	2.9%	863,152	2.52%
Gen Company Activities			458,761	3.4%	458,761	2.98%			38,998	0.1%	38,998	0.11%
Gen Counsel			208,983	1.6%	208,983	1.36%	455	0.0%	351,314	1.2%	351,770	1.03%
Corporate SLA			192,333	1.4%	192,333	1.25%			357,302	1.2%	357,302	1.04%
Corp Secretary	341	0.0%	182,057	1.4%	182,398	1.19%	410	0.0%	239,701	0.8%	240,111	0.70%
Corp Development			167,748	1.3%	167,748	1.09%			288,858	1.0%	288,858	0.84%
Investment			36,869	0.3%	36,869	0.24%			63,108	0.2%	63,108	0.18%
Real Estate			9,038	0.1%	9,038	0.06%			366	0.0%	366	0.00%
Commercial Operations Grp			(18,788)	-0.1%	(18,788)	-0.12%			51,468	0.2%	51,468	0.15%
Unassigned Departments				0.0%		0.00%			106	0.0%	106	0.00%
Total Services Billed	$1,993,861	100.0%	$ 13,396,899	100.0%	$ 15,390,761	100.00%	$4,397,138	100.0%	$ 29,919,989	100.0%	$ 34,317,128	100.00%
	12.95%		87.05%		100.00%		12.81%		87.19%		100.00%	

Apart from services transferred from PHISCo post-merger, corporate governance and Exelon Utilities-performed activities related to utility oversight, planning, and performance enhancement and measurement have comprised the predominate source of service costs to PHISCo and its operating companies. Exelon's Exelon Utilities organization has overall responsibility for all Exelon delivery utility businesses. EBSCo's total costs to ACE grew from approximately $15.4 million to $34.3 million from 2016 to 2017, respectively, while PHISCo's total costs to ACE decreased from approximately $155.3 million to $135.4 million from 2016 to 2017 as shown in the preceding subsection. As PHISCo charges decreased in 2016 and 2017 from the 2015 levels, EBSCo costs increased for the majority of the services provided to ACE in 2016 of $15.4 million and 2017 of $18.9 million from 2016. The increases in EBSCo services and costs to ACE arose predominately from allocations, rather than direct charges. EBSCo primarily provides corporate governance and support services to ACE, which in our experience are generally charged by allocation.

EBSCo costs to ACE for 2017 exceed those of 2016, largely reflecting that: (a) EBSCo did not begin to charge ACE until the fourth month of 2016, and (b) EBSCo provided additional IT project work in 2017 to support PHI utilities, including ACE. The percentage of total costs directly charged decreased slightly from 2016 to 2017.

We also compared the EBSCo billed services for 2016 and 2017 from the preceding table to the 2017 CAM list of services. It is not possible to match the billed versus CAM-listed services fully, because there is no one-for-one matching of EBSCo service descriptions included in the exhibits to the PHI CAM from EBSC and service bills - - distinguishing EBSCo from PHISCo practice.

c. <u>PHISCo and EBSCo Costs to Other Affiliates</u>

PHISCo and EBSCo provide services not just to ACE, but to all the affiliates within PHI and Exelon, as the next table summarizes. The table shows the percentage of total costs directly and indirectly billed to each affiliate by PHISCo for 2015, 2016 and 2017. The costs for ACE in this table include "Company 1715 – ACE Financial," ACE's financing company. This addition explains the value differences in this table as compared with some others.

2015, 2016, 2017 PHISCo Services Provided to Affiliates

PHISCO Costs to Affiliates										
2017	**Direct and Indirect Costs by Affiliate**									
Affiliates		Total			Direct	%		Indirect	%
ACE	$	135,416,667	23.8%	$	29,286,504	22.8%	$	106,130,163	24.1%
Delmarva		165,063,491	29.0%		43,878,996	34.2%		121,184,494	27.5%
Pepco		219,018,530	38.5%		54,658,874	42.6%		164,359,657	37.3%
Total PHI		**519,498,688**	**91.3%**		**127,824,374**	**99.6%**		**391,674,314**	**88.9%**
EBSC/Exelon		47,134,513	8.3%		-	0.0%		47,134,513	10.7%
Other Affiliates		2,141,135	0.4%		469,195	0.4%		1,671,940	0.4%
Total PHISCO	**$**	**568,774,336**	**100.0%**	**$**	**128,293,569**	**100.0%**	**$**	**440,480,767**	**100.0%**
2016	**Percentage of Direct and Indirect Costs by Affiliate**								
Affiliates	Total			Direct		%	Indirect		%
ACE	$	155,313,775	23.4%	$	29,457,536	21.6%	$	125,856,239	23.8%
Delmarva		193,609,128	29.1%		45,668,170	33.5%		147,940,958	28.0%
Pepco		263,235,466	39.6%		55,777,848	41.0%		207,457,618	39.2%
Total PHI		**612,158,369**	**92.1%**		**130,903,554**	**96.1%**		**481,254,815**	**91.0%**
EBSC/Exelon		42,660,634	6.4%		-	0.0%		42,660,634	8.1%
Other Affiliates		10,202,785	1.5%		5,245,069	3.9%		4,957,716	0.9%
Total PHISCO	**$**	**665,021,787**	**100.0%**	**$**	**136,148,623**	**100.0%**	**$**	**528,873,165**	**100.0%**
2015	**Percentage of Direct and Indirect Costs by Affiliate**								
Affiliates		Total			Direct	%		Indirect	%
ACE	$	143,309,752	24.8%	$	29,535,188	21.4%	$	113,774,564	25.9%
Delmarva		179,214,535	31.0%		43,706,288	31.6%		135,508,246	30.8%
Pepco		239,810,349	41.5%		58,154,693	42.1%		181,655,656	41.3%
Total PHI		**562,334,636**	**97.3%**		**131,396,170**	**95.1%**		**430,938,466**	**98.0%**
EBSC		-	0.0%		-	0.0%		-	0.0%
Other Affiliates		15,412,947	2.7%		6,808,049	4.9%		8,604,898	2.0%
Total PHISCO	**$**	**577,747,584**	**100.0%**	**$**	**138,204,219**	**100.0%**	**$**	**439,543,365**	**100.0%**

Form 60 reporting shows the 2017 $47.134M and the 2016 $46.660M as direct charges. However, management explained that Exelon costs represent allocated costs for services in areas that include finance, government affairs, human resources, legal, information technology, risk, supply, and executive support.

Considering PHISCo-provided services and costs to all affiliates, the percentage of directly and indirectly charged costs to ACE from 2015 through 2017 (pre-to post-merger), remained flat over the three-year period, averaging about 22 percent for direct charges and 25 percent for indirect charges. Other chapters addressing affiliate costs by function confirm a lack of substantial variation in the shares borne by ACE over time. We attribute the decline in the percentage of indirect costs from 2015 to 2017 to the type of governance and shared service costs transferred from PHISCo to EBSCo, beginning in 2016. The other affiliates charged by PHISCo include the PHI-level holding company and Exelon Generation.

The next table shows EBSCo costs charged to affiliates for 2016 and 2017 and the affiliate's percentage of direct and indirect costs to the total billed by each charging method. EBSCo's cost for 2016 reflects approximately nine months of costs billed by EBSCo to PHI affiliates and 12 months of costs billed to other affiliates, while 2017 includes 12 months of billed costs, making the costs not directly comparable. Additionally, each year witnesses specific, one-time merger and accounting adjustments differing in types and amounts. The Other Affiliates category includes Exelon's non-PHI subsidiaries.

2016 and 2017 EBSCo Services Provided to Affiliates

EBSC Costs to Affiliates								
2017	**Percentage of Direct and Indirect Costs by Affiliate**							
Affiliates	Total			Direct	%		Indirect	%
ACE	$	34,317,127	1.9%	$ 4,397,138	0.6%	$	29,919,989	2.9%
Delmarva		42,809,378	2.3%	5,910,473	0.7%		36,898,905	3.6%
Pepco		72,161,173	4.0%	10,295,191	1.3%		61,865,982	6.0%
Total PHI		**149,287,678**	**8.2%**	**20,602,802**	**2.6%**		**128,684,876**	**12.5%**
PHISCO		33,439,808	1.8%	13,701,521	1.7%		19,738,287	1.9%
Other Affiliates		1,639,007,131	90.0%	755,651,672	95.7%		883,355,459	85.6%
Total EBSC	**$**	**1,821,734,617**	**100.0%**	**$ 789,955,995**	**100.0%**	**$**	**1,031,778,622**	**100.0%**

EBSC Costs to Affiliates								
2016	**Percentage of Direct and Indirect Costs by Affiliate**							
Affiliates	Total			Direct	%		Indirect	%
ACE	$	15,390,761	0.9%	$ 1,993,861	0.3%	$	13,396,900	1.5%
Delmarva		18,894,560	1.1%	2,611,971	0.3%		16,282,589	1.9%
Pepco		31,370,546	1.9%	4,043,163	0.5%		27,327,383	3.1%
Total PHI		**65,655,867**	**4.0%**	**8,648,995**	**1.1%**		**57,006,872**	**6.5%**
PHISCO		22,844,915	1.4%	13,237,072	1.7%		9,607,843	1.1%
Other Affiliates		1,556,407,860	94.6%	749,882,638	97.2%		806,525,222	92.4%
Total EBSC	**$**	**1,644,908,642**	**100.0%**	**$ 771,768,705**	**100.0%**	**$**	**873,139,937**	**100.0%**

d. Non-Service Company Transactions

In addition to services provided to ACE by PHISCo and EBSCo, ACE provides services to and receives services from other non-Service Company affiliates. Management states that in addition ACE charges to and from affiliates, other, cross-company charges occur as well. Most involve labor for services and materials charged to and from ACE and Exelon's other utilities. These charges occur on a limited basis; *i.e.*, for costs directly charged or allocated to an affiliate other than PHISCo or EBSCo. Such instances can occur when there is storm damage in one affiliate and other affiliates provide labor resource assistance.

Management does not prepare monthly analyses addressing in detail these non-EBSCo and non-PHISCo charges (*e.g.*, labor and materials). However, it does include in annual FERC Form 1 reports labor and material transactions exceeding certain thresholds.

The next table identifies costs charged by ACE to non-PHI utility affiliates for 2015, 2016, and 2017. ACE has provided services to two affiliates Atlantic Southern Properties (ASP) and Thermal Limited Energy Partnership (TELP) for facility and building services and use of intercompany electricity. ACE also received 2016 and 2017 electric transmission credits from Exelon Generation, related to ACE/Generation power transactions. ACE purchases of power from Generation became affiliate transactions following merger closing. ACE discontinued providing building services and electricity to TELP following its sale in May 2016.

ACE Services Provided to Non-PHI Utility Affiliates

Affiliates	ACE Services Provided to Affiliates		
	2015	2016	2017
Exelon Generation Company, LLC (EXGEN)			
Electric transmission credits	$ -	$ (350,167)	$ (285,480)
Atlantic Southern Properties (ASP)			
Facility services	$ 352,816	$ 511,776	$ 560,679
Intercompany use of electricity	535,715	831,976	605,343
Total	$ 888,531	$ 1,343,752	$ 1,166,022
Thermal Limited Energy Partnership (TELP I)			
Building services	$ 45,000	$ 18,750	$ -
Intercompany use of electricity	942,051	481,647	-
Total	$ 987,051	$ 500,397	$ -
Grand Total	$ 1,875,582	$ 1,493,982	$ 880,542

The next table presents the costs non-service-company or non-PHI utility affiliates charged to ACE for 2015, 2016, and 2017. ACE receives services from four affiliates: (a) Generation for power purchased under New Jersey' BGS process, (b) Millennium Account Services for meter reading, (c) Atlantic Southern Properties for a May's Landing building lease, and (d) PECO Energy Company for extra high voltage transmission rental. Millennium Account Services and PECO directly charge their costs to ACE; Atlantic Southern Properties leasing costs get allocated based on square footage.

Non-PHI Utility Affiliates Services Provided to ACE

Affiliates	Affiliate provided services to ACE		
	2015	2016	2017
Exelon Generation Company, LLC (EXGEN)			
Purchase power transactions	$ -	$ 37,111,781	$ 28,501,824
Millennium Account Services, LLC			
Meter reading services	$ 4,361,801	$ 4,304,336	$ 4,547,018
Atlantic Southern Properties (ASP)			
Building services (Lease of May's Landing)	$ 1,941,722	$ 2,181,236	$ 2,280,041
PECO Energy Company (PECO)			
Extra high voltage transmission rental	$ -	$ 83,119	$ 107,736
Total	$ 6,303,523	$ 43,680,472	$ 35,436,620

Two other transaction paths for affiliate cost flows consist of: (a) costs charged to the PHI Holding Company category, and (b) "convenience payments." The PHI Holding Company category includes a variety of costs, which include interest expense and dividend income, state and federal tax liabilities, minority equity positions from purchased companies, goodwill impairment costs and charges from PHISCo and EBSCo predominately for Executive Management, Financial Services & Corporate Expenses, and Human Resource costs. ACE does not bear any of these costs, either through direct charging or allocation. Convenience payments comprise those made by one entity on behalf of another. For example, PHISCo or EBSCo normally pay invoices for the purchase of goods and services made for more than one company. Convenience payments, also known as "pass-through costs" get reported on annual PHISCo and EBSCo FERC Form 60 reports in Schedule V.

D. Conclusions

1. The PHI Cost Allocation Manuals used during the period of this audit provided sufficient documentation of the cost assignment procedures among the PHI affiliates, but lacked sufficient documentation of cost allocations to ACE from EBSCo. *(See Recommendation #1)*

CAMs should provide the principal documentation of cost assignment procedures for internal company personnel, and should provide clear standards for regulatory and auditor examination and testing. CAMs should provide a sound, comprehensive understanding of costing principles and procedures and sufficient detail and granularity to give users a clear basis for performing tasks required for full, fair charging and for an independent examiner to validate such charging.

The main body of the PHI CAMs in use from 2015 through 2017, together with their incorporated PHISCo Service Agreements, document the cost assignment procedures from PHISCo to ACE and other PHI affiliates, and set forth the procedures for cost assignment among other PHI affiliates, including ACE. These documents provided the general costing principles and included sufficient information about cost accounting, accumulation, and distribution methods to produce a basic understanding of principles and procedures. More importantly, the PHISCo Service Agreement detailed the services provided to affiliates, and listed the allocators for each specific service and the precise definition of allocators.

The 2017 CAM, in use following the 2016 Exelon merger, references the costing of inter-affiliate transactions involving ACE's new Exelon affiliates, principally set forth in two exhibits: the EBSCo General Services Agreement and the 2017 Exelon Business Services Company Service Areas & Cost Assignment Methods. The CAM's main body provides some information about Exelon costing principles and the two exhibits give high-level information about services provided and allocators used. However, none of the documentation provides information about the cost accounting, accumulation, and distribution methods EBSCo uses. Moreover, for many EBSCo services, it is not clear which allocation method EBSCo applies to some of the services it provides.

For those services lacking appropriate detail, Exelon has simply listed a set of possible categories of allocators that can be used, with the determination to be based on "an appropriate cost-causative allocation methodology." Therefore, the CAM provides insufficient guidance on how to assign or allocate costs, leaving broad discretion on how to do so. The lack of this information becomes particularly significant in light of Conclusion #5's observation that the vast majority of EBSCo costs to ACE come through allocation - - not direct charging. An Exelon BSC Service Catalog, not part of the CAM, provides a more detailed breakdown of services provided and links specific service with an allocation method. However, even the catalog often fails to specify specific assignment and allocation bases, frequently permitting any "Cost Causative Method."

The Exelon documentation also lacks detailed definitions of the precise formulas used to calculate the allocators.

2. **PHI did and Exelon now employs industry-leading and effective systems for cost accounting, accumulation and distribution to and among affiliates; they have been accompanied by detailed documentation and transparency for the affiliates receiving services.**

Through 2017, PHISCo used SAP, moving to Exelon's Oracle-based general ledger and accounting system in 2018. Both systems are robust and are in use at a very large and broad set of large companies. The systems record the accumulation and distribution of transaction cost flows from the initial source of the transaction to the final charges to benefitting affiliates, such as ACE. PHISCo's Intercompany Accounting group exercised appropriate responsibility for cost accounting. EBSCo's accounting and finance groups have responsibility for ensuring that affiliate transactions get recorded properly and in accord with applicable requirements. EBSCo employs processes similar to those PHISCo had employed for the accumulation and distribution of costs.

Our review of month-end closing and cost flow processes used to accumulate and distribute costs to and from affiliates found the processes and systems adequate in providing accurate and transparent costs charged to affiliates.

3. **PHISCo and EBSCo calculate pricing of affiliate services, allocation factors, and overheads correctly, and have used adequate processes to charge affiliate costs.**

PHISCo's former ATPs provide standard rates, which include overheads, for direct charging of its costs. PHISCo used allocation ratios, or SKFs, to allocate the remaining residual costs following all those directly charged. EBSCo uses actual labor costs to direct charge and allocate costs. Both approaches serve for service companies providing generally similar services to similarly situated utility affiliates. Our review and examination of PHISCo and EBSCo processes for direct charging and allocation found them appropriate and sufficient.

We also recalculated PHISCo's ATPs, associated overheads, and allocation ratios, finding all those we tested correctly calculated. As the Company noted, EBSCo does not use ATPs but charges out actual labor to affiliates. The change at the start of 2018 to Exelon's approach of charging actual labor dollars will bring all to a single approach, which will be time-based charging, while continuing to provide an accurate means for such charges.

4. **The cost allocation factors used by PHISCo and EBSCo differ in many cases for the same services performed, and PHISCo and EBSCo use different general allocators; however, it is not clear whether this significantly affects the allocations of costs to ACE.** *(See Recommendation #2)*

PHISCo and EBSCo use different general allocators. PHISCo uses a two-factor allocator, averaging the ratio of operations and maintenance costs with that of gross property, plant, and equipment. EBSCo uses a modified version of what is known as the "Massachusetts Formula," based on averaging three factors: gross revenues, total assets, and direct labor. Furthermore, the two service companies use different versions of some cost-causative allocators, and do not apply the general allocators or the cost-causative allocators to the same service functions.

Use of different allocators for the same function can cause confusion and distortions in the allocations. A company filing with the BPU analyzed the impact of using these different allocation methods, based on data for 2017. That filing showed a lower aggregate allocation of EBSCo costs to ACE under the EBSCo versus the PHISCo allocators for functions transferred from PHISCo to EBSCo for that one year. Whether this result is unique to 2017 or will continue in the future is an open question. It also begs the question as to why management continues to use multiple allocators.

Management filed PHI CAM and PHISCo service agreement modifications with the BPU on December 20, 2017, with an effective date of January 1, 2018. Management has noted that these modifications include provisions calling for allocating the costs of most PHISCo support services using the general allocator, as opposed to the service-specific cost-causative allocators used previously. An example of those previous allocators is the use of the ratio of the number of end users to allocate information systems support costs. These modifications may significantly increase the percentage of costs allocated using the PHISCo general allocator. If so, since the revised service agreement continues PHISCO's use of the two-factor general allocator despite the change from the SAP system to EPS in 2018, these changes would likely exacerbate the impact of differences between the PHISCo and EBSCo general allocators on ACE.

5. **The fraction of service company costs directly charged to ACE, already comparatively low, has fallen significantly lower since our last examination of PHISCo charges.** *(See Recommendation #3)*

Direct charging of the costs of the services that centralized support organizations provide to benefiting affiliates generally provides a more precise and effective means than cost allocation when direct charging is possible and appropriate. At the same time, however, it is difficult to identify causative allocation bases for some common costs (*e.g.*, many executive and administrative services). Management states that both PHISCo and EBSCo prioritize direct charging of costs. Such prioritization by EBSCo is also a commitment of the merger (Paragraph 76 of the Stipulation of Settlement in the Merger Docket). Nevertheless, the overall percentage of directly charged costs from both PHISCo and EBSCo has remained comparatively low, as the next table illustrates.

Service Company Charges to ACE – Direct vs. Allocated Percentages

Year	Service Co.	% Direct	% Allocated
2015	PHISCo	20.6 %	79.4 %
	EBSCo	--	--
	Total	**20.6 %**	**79.4 %**
2016	PHISCo	19.0%	81.0%
	EBSCo	13.0%	87.0%
	Total	**18.4%**	**81.6%**
2017	PHISCo	21.6%	78.4%
	EBSCo	12.8%	87.2%
	Total	**19.8%**	**80.2%**

We observed a general trend toward lower percentages of direct charging from PHISCo, even before the merger. Our earlier audit of Pepco, covering the period from 2009 through 2011, found that overall direct charging to the PHISCo utility affiliates dropped from 36.5 to 29.5 percent over that period.

The PHISCo Service Agreement attached to the 2017 CAM states that "[t]o the extent practicable, services will be directly charged." The EBSCo Services Agreement attached to the 2017 CAM states that the EBSCo cost assignment methods:

> *generally require direct billing of services to the extent possible, then allocation based on cost causative allocation methods of costs that cannot be directly assigned*

– but also that –

> [d]*irect charges shall be made so far as costs can be identified and related to the particular transactions involved without excessive effort or expense.*

Thus, it appears that management only commits to direct charging "*to the extent practicable*" and "*without excess effort or expense*," which suggests that it is not likely to make any special efforts to ensure that direct charging will be maximized. The current low fraction of EBSCo direct charging also calls into question Exelon's commitment to Settlement Stipulation Paragraph 76 requiring direct charging of EBSCo costs whenever practical and possible. Indeed, as noted in Conclusion #9, the Exelon time reporting system may contribute to the small amount of direct charging because it uses default coding of the charges, thereby requiring employees explicitly to change the charging code from the default (mostly allocated) code to a direct charging code when a portion of the time they are reporting may be directly for a single affiliate.

Management observed that, upon the completion of the merger in 2016, EBSCo made system updates to add charge codes that would facilitate direct charging to PHI affiliates and communicated these changes to the employees. It is not clear based on the data shown in the table above updating has had a substantial impact on the direct charging shares of total costs borne by ACE.

6. The fraction of service company costs allocated to ACE using general allocators is very high. *(See Recommendation #4)*

Directly charged amounts comprise, as the prior conclusion observed, a comparatively small share of total affiliate costs borne by ACE. The same is true of costs allocated using causally-based factors. This leaves, as the next table shows, a very high percentage of affiliate costs coming to ACE through general allocators. EBSCo charged using its Massachusetts Formula general allocator 56.6 percent of the portion of its 2017 costs that were allocated rather than directly charged to ACE. PHISCo charged 39.5 percent of the allocated costs using its Two-Factor general allocator. Combined, the total percent of all 2017 costs that ACE bore from the two service companies under their general allocators came to 43.2 percent.

2017 Service Company Charges to ACE

Charging Method	PHISCo	EBSCo
Direct	21.6%	12.8%
General Allocator	30.9%	49.3%
Other Allocators	47.5%	37.8%
Total Allocated	78.4%	87.2%

General allocators derive from averages of various broad characteristics of entities served by service companies and other affiliates. PHISCo's general allocator is based on the average of two factors: (a) operations and maintenance costs, and (b) gross property, plant, and equipment. EBSCo's general allocator is based on three factors: (a) gross revenues, (b) total assets, and (c) direct labor. Such broadly constructed and averaged allocators bear a very indirect relationship to the drivers of work. Cost-causative allocators properly defined and applied better reflect what drives the efforts and therefore the costs of service company work for affiliates. Examples include using the square footage of buildings to charge for work of a facilities group or using numbers of employees for work of a human resources group. General allocators should usually be restricted to very high-level corporate functions like executive management. The very extensive use of general allocators here provides a much less desirable means of allocation, despite management's view that using such allocators is "more efficient" and more "consistent."

The numbers shown in the table above indicate that PHISCo has made somewhat lesser use of its general allocator than did EBSCo for 2017. However, we anticipate a change (and one in the wrong direction) in the future, given the modifications to the PHI CAM and PHISCo service agreements filed with the BPU on December 20, 2017. Management has stated that these modifications include provisions specifying the allocation of the costs of most PHISCo support services under the general allocator - - in lieu of service-specific cost-causative allocators used previously. These modifications will likely increase the percentage of costs ACE bears under PHISCo's general allocator. Whether these changes have a significant impact on cost allocation to ACE depends on how different the general allocator allocation ratios are from the cost-causative ones. Management has stated that it has assessed the impact of the changes in the PHISCo allocators introduced in the new CAM to ensure they will not have a significant or material impact on ACE or the other PHISCo affiliates. Nevertheless, because these modifications will strongly tend to increase the fraction of costs allocated by the general allocator, they may at least exacerbate any distortions produced by the use of inconsistent general allocators between PHISCo and EBSCo and suggest the need for vigilance about this matter going forward.

7. Management has used transparent and appropriate methods for charging the much smaller charges from affiliates besides the service companies to ACE and between ACE and other affiliates.

Excepting charges from the two service companies, PHISCo and EBSCo, the most significant inter-affiliate charges involving ACE during the 2015-2017 period involved Basic Generation Service electric supply from Exelon Generation under agreements produced through the BPU's competitive procurement process. Excluding these purchases, the total amount of non-service company transactions remained at a comparatively low level (about $9 million annually) from 2015 through 2017. Most of these annual amounts are charges to ACE. Most of that remainder involved directly charged costs from Millennium Account Services and PECO, although some involved leasing costs (allocated on the basis of square feet) associated with Atlantic Southern Properties. The charging methods proved consistent with the requirements of the CAM.

8. **Exelon provides some policy documents and training to employees to control the initiation of affiliate transactions and assignment of affiliate transaction costs; however, these documents and training provide less information about and emphasize less the importance of complying with regulatory affiliate transaction requirements than those formerly used by PHI.** *(See Recommendation #3)*

The Exelon Corporation Code of Business Conduct covers the need for ethical employee conduct in a wide range of business contexts. A strong message from the Chief Executive Officer introduces the code and it makes clear the disciplinary consequences for non-compliance in general. Management provides mandatory Annual Code of Business Conduct Training, developed each year by the Exelon Ethics Office. Most employees complete this training using the Exelon electronic Learning Management System. This system also documents employee completion of the training, which the Ethics Office reviews and certifies. All management employees must also complete an Annual Code of Business Conduct certification, which requires disclosure of potential conflicts or appearance of conflicts of interest. The Ethics Office reviews the certification, and follows up and investigates as appropriate. However, this training provides only very high-level information about affiliate transaction requirements and how to comply with them.

The Exelon Code includes two brief sections related to proper conduct with affiliates and assignment of affiliate transaction costs: (a) "Creating, Maintaining and Disclosing Accurate Books and Records," and (b) "Ensuring Appropriate Affiliate Interactions." The first of these sections lists regulators among those who rely on accurate books and records, observing that "[a]ccurate and transparent record keeping … helps us to meet our legal and regulatory obligations." However, this section provides no information about any particular requirements of regulated utility accounting. The other section specifically addresses affiliate interactions, and includes among the list of requirements for "appropriate affiliate interactions" the need to "properly charge or allocate costs" involving regulated utilities. It fails, however, to define proper charging and allocation or state where to find out how to do so correctly. The document lists some codes of conduct and affiliate regulations. However, since the latest version of the Code provided to Liberty is dated 2015, this list does not include any state requirements applicable to the former PHI utilities, including ACE.

Furthermore, the Code does not provide any links to or explanations of where to find these requirements. Management advised that "managers are responsible for ensuring that their staff uses the proper cost objects on all source transactions such as timesheets, material requisitions and voucher payments," although the Code itself does not make this explicit, apart from a general statement that managers "must understand and communicate laws and regulations affecting their areas of operation."

By comparison, the PHI Corporate Business Policies document, the last version of which was dated 2016, provided considerably more detail about how to comply with cost allocation procedures. It included explicit references to the CAM and the relevant state and Federal codes of conduct and compliance plans along with links to each of these. The PHI Corporate Business Policies document notably includes the following wording emphasizing the importance of compliance with cost allocation regulations: "Cost allocations play a significant role at PHI" and that "PHI's business is subject to regulations in the states where PHI has customers and PHI must comply with the mandates for cost allocation methods in these various jurisdictions." The Exelon Code contains no such strong language explicitly addressing appropriate cost allocation.

As remains the case, PHI management employees also were required to complete an annual certification process. This process has included the requirement for management employees to take and pass an online training course on the Corporate Business Policies. This course explicitly noted the need for proper cost allocation and highlights that regulatory codes of conduct and the CAM, including the statement: "All those working at PHI must comply with these codes and rules. It is your responsibility to review the codes and the CAM and to understand your responsibilities and what you may and may not do."

9. PHI's former and Exelon's current time reporting systems and processes provide capabilities and controls allowing for accurate time reporting; however, the Exelon system includes a default cost assignment method, which tends to discourage direct assignment of labor costs from the service companies. *(See Recommendation #5)*

Through 2017, PHI employees used the SAP CATS module for time entry. This module allowed employees to associate all or portions of their time with "cost objects" that were used for assigning employee time and other costs to various entities. Employees either entered their time directly into the system or approved Time Administrators performed the time entry for the employee. Except for high paygrade employees, an employee's supervisor or cost center manager had to approve the time for each payroll period and was responsible for ensuring that the time was coded to ensure proper cost assignment. A detailed quick reference guide and other reference sheets were available to assist employees in the time entry process. PHI also had a Payroll Time Entry and Approval Policy document containing the policies that govern this process. This document included among its contents a policy for proper cost allocation in time reporting, which stressed:

- The employee's responsibility to charge to the appropriate cost object.
- The time approver's responsibility to make sure that the appropriate cost object has been charged.
- That fixed time distribution (that is, the same amount of time being charged to the same cost objects on a daily basis) was not permitted.

EBSCo and other Exelon employees use the eTime system for time entry. In this system, employee time is assigned to "codeblocks," which the Exelon financial system uses for cost assignment and allocation. A notable feature of this system, however, assigns to employees default codeblocks to which the employee time is automatically assigned - - unless the employee affirmatively enters a different codeblock. Management assigns a default codeblock to each employee based on the role she or he performs and the employee's business unit and department.

Exelon's internal time entry documentation notes that "most employees are assigned an 'allocate all' operating unit code block as the default for labor charges." Thus, unless an EBSCo employee's normal work involves a single affiliate, the default time assignment will be some form of allocation. In cases where an EBSCo employee occasionally does work directly for an affiliate, that employee must enter a different codeblock from the normal time entry mode. Such default time reporting systems tend to discourage direct charging. Management asserts that it prioritizes direct charging of costs, such prioritization by EBSCo comprising a commitment of the merger. Furthermore, the annual communication Exelon sends to EBSCo employees clearly states the need first to directly charge a single affiliate when appropriate, or to specify appropriate affiliates for allocation when only a subset benefit before using the default codes. Nevertheless, the use of default codes as a "path of least resistance" for time reporting requires what we view as a higher than necessary level of employee vigilance in order to achieve these objectives and commitments in practice. As noted in Conclusion #5 the actual fraction of EBSCo direct charging is quite small - - a result to which default coding in eTime likely contributes.

Positive time reporting, in which employees must consciously consider the appropriate coding for their work, allows more precision and accuracy in time reporting by placing the choice of coding at a level closest to the actual work performed, the employee or time keeper, rather than relying on a larger work center to determine an "average" cost assignment for all employees in the center over time, as a default reporting structure does.

10. Employee expense reporting systems and processes provide capabilities and controls sufficient to ensure accurate and appropriate assignment of employee expenses.

Through 2017, PHI employees used a corporate credit card to pay for most business travel expenses. Employees recorded expenses not charged to a corporate card into an SAP module, with training to use this module required and provided. PHI required approval of expenses by higher level managers and provided training for approvers. Other Exelon employees followed and continue to follow a similar procedure and also have access to training materials. Like the former PHI process, Exelon uses a well-defined process for expense approval. These processes include appropriate and sufficient procedures to ensure reasonably accurate expense reporting.

E. Recommendations

1. Update the EBSCo CAM to provide more complete information about allocation methods and procedures. *(See Conclusion #1)*

The EBSCo CAM does not sufficiently specify how EBSCo determines the costs it charges through allocation. In particular, the CAM lacks complete documentation as to: (a) which allocators apply to each activity provided, and (b) the precise, quantified factors to be applied. Management needs to add this detail to the CAM.

We did find internal documentation providing more specificity on the allocators applicable for each service in EBSCo Service Catalog. However, even this document fails in many cases to specify the exact allocators used. An enhanced version of the catalog can address the lack of definition of the precise allocators by service or activity. We have, however, found no internal documentation specifying precise allocation formulas, thus requiring more extensive enhancement to address the lack of precise, quantified factors.

2. Reconcile the differences between the PHI and Exelon cost allocation schemes to create a uniform method for allocating costs to ACE from all affiliates. *(See Conclusion #4)*

PHISCo and EBSCo frequently use different allocators for the same services to allocate costs to ACE and the other PHI utilities. Also, the two service companies use different general allocators. This difference could be especially significant, given the particularly high fraction of costs allocated via a general allocator currently and likely even more so in the future as noted in Conclusion #6. The Company's analysis of 2017 costs showed a lower aggregate allocation of EBSCo costs to ACE using the EBSCo allocators rather than the PHISCo ones for those service company functions that have transferred from PHISCo to EBSCo.

A single, integrated set of allocators has substantial appeal. We do, however, recognize that the technical and operating services provided by PHISCo and its more limited set of "customers" (the three PHI utilities) may call for differences. Unlike PHISCo, which serves only electricity distribution utilities, Exelon operates very large generation and marketing businesses. Moreover, to the extent that a change in the formulas changes cost shares among the utilities (those of PHI for PHISCo, but all of them for EBSCo), it may be that some in the jurisdictions involved will see the matter in terms of cost "winners" and "losers."

Therefore, what is in order is a comprehensive review of the activity definitions each of the two service companies use, a justification of differences between them, an explanation for stakeholders across the Exelon utility footprint of the effects of reconciling those differences that are not justified by differences in the underlying activities involved, and a recommendation for producing a more integrated approach and detail. History, or even regulatory precedent for that matter, do not alone justify continuation just on the basis of "momentum."

3. Undertake focused efforts to make clear that management's stated priority on direct charging sufficiently impels employees to do so. *(See Conclusions #5 and #8)*

The proportion of service company (PHISCo and EBSCo) costs directly charged to ACE, rather than allocated, have decreased in recent years. Changes in the nature of the PHISCo services, such as the reorganization to move direct charging employees into the utilities and consolidation of support systems across the utilities, may partly explain the trend for the PHISCo costs.

Management should investigate in a comprehensive and structured way reasons for the decreased percentage of service company costs directly charged to ACE. This examination should be followed with corrective action to address all cases where decreases in or sustained low levels of direct charging result from: (a) systems and methods that make direct charging burdensome for employees, (b) insufficient attention to the production of a sufficiently comprehensive and robust set of activity and other charging codes, (c) restricting opportunities to directly charge time or assign it to causally-based, specific allocators by committing more work to general allocation, and (d) leaving broad discretion through insufficient attention to causal method allocation and formulas in governing documents (like the CAM and related materials).

Management's examination should include a detailed review of cost charging records to ensure that cost assignments give the required priority to direct charging. The available information and the nature of the approaches (*e.g.*, hardcoding time entries) does not give confidence that such a priority has practical impact.

The appropriate direct charging percentage for a service company depends on the nature of the services provided by that company to the operating affiliates. Although this means that there is no single benchmark that can be used to assess whether the amount of direct charging is correct, it is important to monitor trends in the direct charging percentages and to test samples of individual transactions to ensure that any observed trends can be accounted for through actual changes in the nature of the services provided by the service company rather than simply through inattention to appropriate time and cost charging.

The Exelon Corporation Code of Conduct and its associated training lacks much emphasis on appropriate charging methods or information about how best to comply with cost assignment requirements. Enhancing these to stress the importance of direct charging could improve its use by employees. Even more specifically, Conclusion #7 and Recommendation #5 address the need to avoid default time charging, which should also provide a means to improve the amount of direct charging.

4. **Investigate the reasons for the excessive use of the general allocator in assigning service company costs to ACE and examine and implement means for reducing the use of general allocators through direct charging or using appropriate cost-causative allocators.** *(See Conclusion #6)*

PHISCo and EBSCo charge a large fraction of their costs to ACE using a general allocator. For EBSCo, the costs charged using the general allocator comprise the largest fraction of all charging methods. The revised CAM, effective 2018, now specifies a larger use of the general allocator for PHISCo also, which means that the PHISCo general allocator fraction is likely to rise as well. General allocators provide the least specific means of cost charging and therefore should be avoided unless they are absolutely necessary. Given their high use by PHISCo and EBSCo, the Company should review its cost assignment procedures and consider ways to reduce their use and substitute them with either direct charging or cost-causative allocators.

5. **Eliminate default time charging from the Exelon employee time entry system and replace it with a positive time reporting process.** *(See Conclusion #9)*

The Exelon eTime system uses default time charging. Employees must take affirmative action each time they access their time records to change the coding assigned to them in eTime. Otherwise, the system automatically charges their time to their default codes. Such default time charging likely has a bearing on the low percentage of direct charging to ACE. Whether or not this is the case, employees are usually the best judges of what they have spent their time on and hence whether a single affiliate was the beneficiary of their work. Therefore, it is a much better practice for employees to always consciously choose the charging codes for their time.

Replacing the practice of default charging by positive time reporting, which requires employees always to choose the appropriate charging codes, prompts them to consider actively how their time was applied and who benefited from their work. It might be argued that positive time entry makes time coding more difficult for employees, but many time entry systems allow employees to set up profiles containing a list of the standard codes they might want to use in order to facilitate the time-entry process. If this is not available in eTime, it should be introduced.

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Chapter V: Capital Allocation

A. Background

We examined capital allocations among Exelon subsidiaries, focusing on how management and the boards of directors determine capital required by and made available for ACE. We assessed the appropriateness of ACE capital allocations relative to those of the other Exelon subsidiaries, both utility and non-utility. Large recent and continuing ACE capital expenditures warrant a two-sided determination of appropriateness - - testing whether ACE receives too much or too little in relation to its service needs.

Among holding companies, the most prevalent approach to allocating capital among utility and non-utility subsidiaries takes place at the highest executive leadership and board levels, typically as part of comprehensive, regularly performed strategic and long-term planning processes. Strategic and long-term holding company plans often provide top-down spending guidance from which subsidiaries begin in making their contribution to the overall allocation process. Utility-subsidiary-derived capital expenditure plans (at the ACE level, for example) should form a primary element in the holding-company capital allocation processes. Best practice includes: (a) utility-formulated initial plans addressing capital needs required to sustain required and effective levels of service and (b) followed by top-level enterprise-wide consolidation and coordination informed by knowledge of needs as utility-level management envisions them. The formation of such baseline, utility-level capital requirements calls for the use of well-developed plans incorporating bottom-up analyses of service needs in relation to existing infrastructure and means for expanding and enhancing it.

Pre-merger capital planning for ACE occurred at the PHI level, under planning conducted for the three operating utilities in a coordinated fashion. PHI operated pre-merger with a very high level of technical and operating resource consolidation across its three utilities. That consolidation continues at PHISCo, making PHI-level (versus ACE-level) planning resources and activities central to ensuring that ACE receives appropriate amounts of ongoing capital to meet utility reliability, infrastructure, growth, and strategic needs. Transient conditions sometimes will appropriately produce immediate-term perturbations in an operating utility’s share of total holding company capital, but continuing such dislocations over the mid- to long-terms can produce reliability consequences. Similarly, over-allocation can generate expenditures that produce an “overbuilt” system whose capabilities exceed levels needed to produce acceptable levels of service reliability, quality, and safety.

B. Findings

1. Capital Allocation Trends

As 2014 began, PHI projected moderately declining capital expenditures for the next five years - - from a projected of $1.29 billion in 2014 to $1.131 for 2018. The next table shows actual capital expenditures in 2013-2018 for the PHI and Exelon utilities, and for Exelon Generation as reported in Exelon and PHI annual 10-K reports (actual through 2017 and estimated for 2018). Annual capital expenditures for all three former PHI utilities did not decrease as expected in 2014, but have actually increased substantially. The increase for the three years since the merger (beginning with 2016) has been even greater, amounting to 25 percent. Exelon merger commitments included a requirement to spend at least 90 percent of the aggregate ACE budget for certain reliability programs over the 2016 through 2021 period. Management has reported that capital spending through December 31, 2018 underwent review by Staff and Rate Counsel in ACE's most recent rate case.

Capital spending at the Exelon legacy utilities (Commonwealth Edison, PECO and BGE) over the same three years grew at a much lower rate than those at PHI since the merger. From 2015-2018 legacy-utility expenditures grew by six percent (one quarter of the rate at the PHI utilities), and have actually fallen since 2016. At the same time a dramatic decrease of nearly half (45 percent) has occurred in Exelon Generation capital spending over these three years.

Exelon and PHI Capital Spending (Utilities and Exelon Generation) 2013-2018

Millions of Dollars							Year-Over-Year Change						
Year	**2018 E**	**2017 A**	**2016 A**	**2015 A**	**2014 A**	**2013 A**	**Year**	**2018 E**	**2017 A**	**2016 A**	**2015 A**	**2014 A**	**18vs15**
Exelon Utilities													
ComEd	$2,125	$2,250	$2,734	$2,398	$1,689	$1,433	ComEd	*-6%*	*-18%*	*14%*	*42%*	*18%*	*-11%*
PECO	$800	$732	$686	$601	$661	$537	PECO	*9%*	*7%*	*14%*	*-9%*	*23%*	*33%*
BGE	$1,000	$882	$934	$719	$620	$587	BGE	*13%*	*-6%*	*30%*	*16%*	*6%*	*39%*
Subtotal	*$3,925*	*$3,864*	*$4,354*	*$3,718*	*$2,970*	*$2,557*	*Subtotal*	*2%*	*-11%*	*17%*	*25%*	*16%*	*6%*
PHI Utilities													
Pepco	$725	$628	$586	*$544*	*$567*	$576	Pepco	*15%*	*7%*	*8%*	*-4%*	*-2%*	*33%*
Delmarva	*$400*	$428	*$349*	$352	*$352*	$357	Delmarva	*-7%*	*23%*	*-1%*	0%	*-1%*	*14%*
ACE	***$375***	***$312***	***$311***	***$300***	***$225***	***$261***	***ACE***	***20%***	***0%***	***4%***	***33%***	***-14%***	***25%***
Subtotal	*$1,500*	*$1,368*	*$1,246*	*$1,196*	*$1,144*	*$1,194*	*Subtotal*	*10%*	*10%*	*4%*	*5%*	*-4%*	*25%*
Exelon Generation													
Subtotal	*$2,100*	*$2,259*	*$3,078*	*$3,841*	*$3,012*	*$2,752*	*Subtotal*	*-7%*	*-27%*	*-20%*	*28%*	*9%*	*-45%*
TOTAL	***$7,525***	***$7,491***	***$8,678***	**$8,755**	**$7,126**	***$6,503***	***TOTAL***	***0%***	***-14%***	***-1%***	***23%***	***10%***	***-14%***

Exelon and PHI 10-K reported information above showed a strong shift away from spending on generation and strongly toward the legacy PHI utilities. ACE capital spending since 2015 has grown by the same 25 percent occurring at the overall PHI level. With Pepco and Delmarva a first, post-merger focus, the capital expenditure growth focus for 2018 lies on ACE - - slated for a 20 percent increase over 2017 actual capital expenditures.

The large Exelon Generation capital expenditure reductions shown in the preceding chart on their own suggest a clear shift away from the previous growth strategy in that business. The Exelon 10-K report for 2017 (filed in January 2018) confirms its existence. In reconciling net income amounts, a footnote (nearly identical to a number of others), states that a table provided:

> *Reflects the one-time recognition for a loss on sale of assets and asset impairment charges pursuant to Generation's strategic decision in the fourth quarter of 2016 to narrow the scope and scale of its growth and development activities.*

A February 2018 presentation to investors and the capital markets observed that Exelon is "Driving Costs and Capital Out of the Generation Business" and expressed a "Value Proposition" describing its investment strategy of:

Capital allocation priorities targeting:

- *Organic utility growth*
- *Return to capital to shareholders with 5% annual dividend growth through 2020*
- *Debt reduction*
- *Modest contracted generation investments*.

Exelon's SEC filings and investor communications *clearly* emphasize a strategy and capital allocation plan focused on regulated utility investment growth and *large reductions in* generation investment. Exelon dedicated a portion of the 10K report filed in early 2018 to "Growth Opportunities." Its discussion confirms the profound shift from generation to utility operations as the source of growth. The description of its "Regulated Energy Businesses states that:

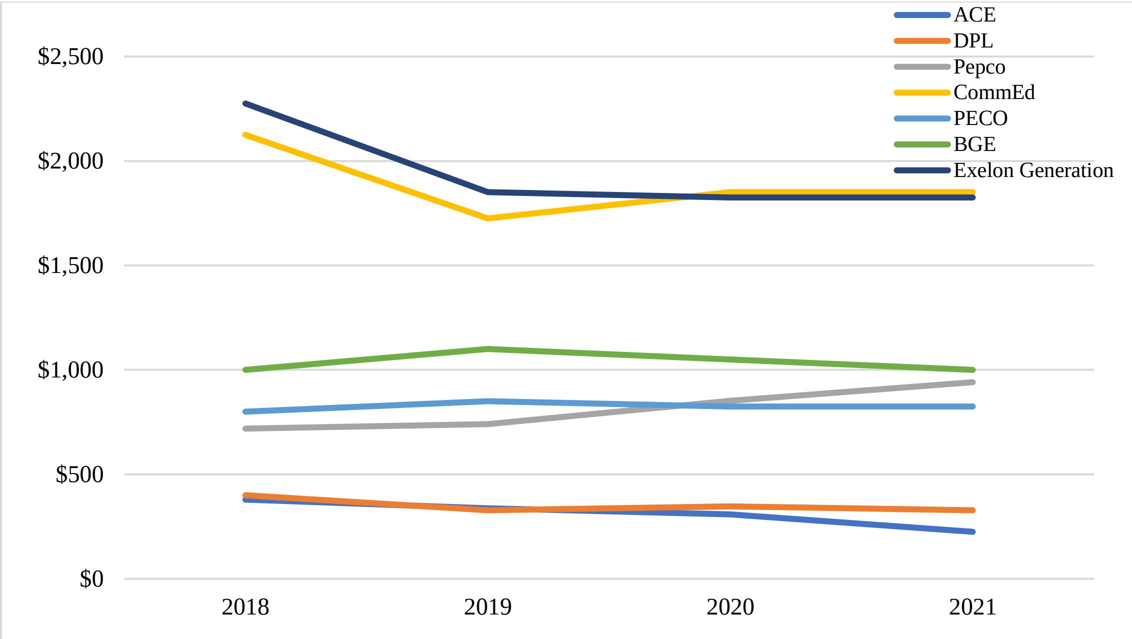
> *The PHI merger provides an opportunity to accelerate Exelon's regulated growth to provide stable cash flows, earnings accretion, and dividend support. Additionally, the Utility Registrants anticipate investing approximately $26 billion over the next five years in electric and natural gas infrastructure improvements and modernization projects, including smart meter and smart grid initiatives, storm hardening, advanced reliability technologies, and transmission projects, which is projected to result in an increase to current rate base of approximately $15 billion by the end of 2022.*

By contrast, the description of growth in the "Competitive Energy Business" emphasizes what appears to be more a maintenance strategy for existing assets and an exploration of new technology that may provide a downstream source of growth:

- Continually assessing generation asset "optimal structure and composition"
- Exploring power and gas sector "wholesale and retail opportunities"
- Ensuring "appropriate valuation of its generation assets, in part through public policy efforts"
- Identifying opportunities to "provide generation to load matching as a means to provide stable earnings"
- Identifying "emerging technologies."

Exelon's current capital allocation and investment strategy as publicly shared with the financial community in this year's investor presentations shows a $26 billion, five-year investment in its utilities, summarized in the next table. Exelon has reported that this capital plan results in utility "rate base growth of 7.4% (annually), representing an expanding majority of earnings" " given continued contraction of the generation business.

Reported Exelon Utility Capital Spending Plans through 2021



The Exelon Capital Plan annually allocates 19-21 percent to the PHI utilities (3-5 percent to ACE), 51-53 percent to the Exelon legacy utilities, and 26-30 percent to Exelon Generation over the next four years. The Exelon Generation capital allocation drops significantly as soon as 2019.

2. *PHI's Adoption of Exelon Capital Allocation Processes*

Pre-merger PHI capital allocation began under the holding-company strategic planning process, beginning in May. A process conducted each year targeted the preparation of a five-year strategic plan by October. Presentation to the parent board of directors, usually at a late-September retreat provided an opportunity for director review while plans remained preliminary. Focus in the October through January period lay on refinement and adjustment of budgets and five-year capital plans for presentation to senior management and to the parent board for approval during January.

Post-merger Exelon capital allocation brought significant change for PHI and for ACE. Exelon's financial planning revolves principally around a coordinated set of five-year plans termed Long-Range Plans (LRPs). PHISCo (for the PHI entities), the other Exelon utilities individually, and Exelon Generation each prepare an individual Long Range Plan. Executive management at the Exelon corporate level then integrates these plans into its overall Long Range Plan at the holding company level.

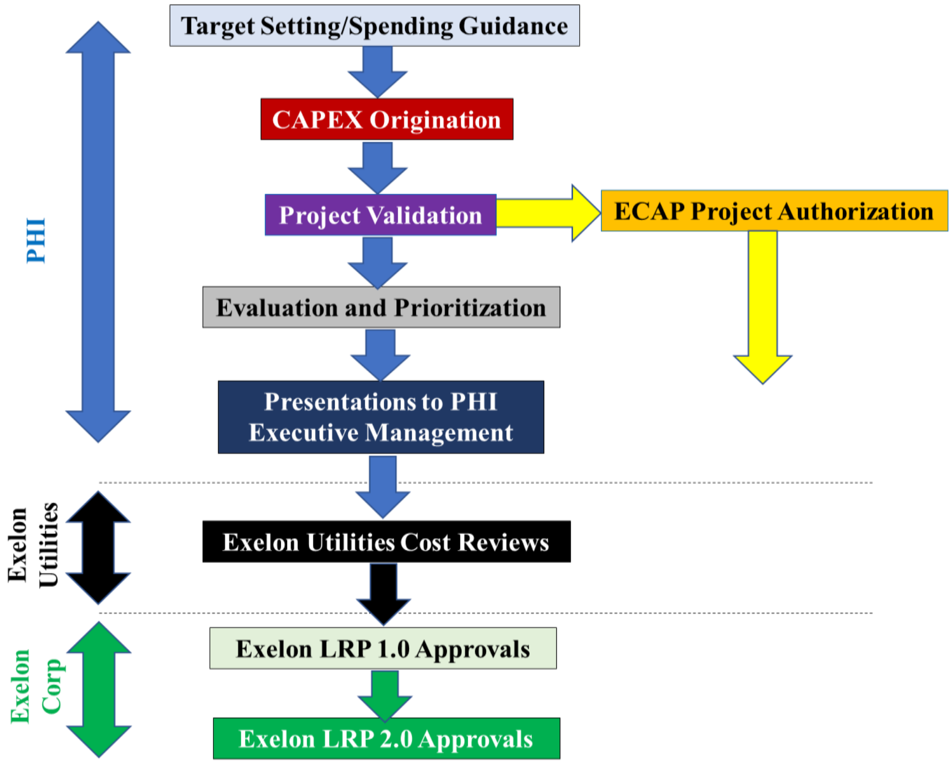
A highly structured process, consisting of two principal stages termed LRP 1.0 and LRP 2.0, produces the holding company Long Range Plan. LRP 1.0, the first stage, runs from April to September each year, culminating in five-year plans that undergo review, amendment, refinement, and approval under LRP 2.0, which seeks to produce board-approved, integrated, five-year plans by early February. For example, presentation to the PHI board of the PHI-level, LRP 2.0 plan for 2018-2022 came on February 6, 2018.

PHI's migration to the Exelon long-range planning processes has continued through work on this years' (2018-2022) version. The migration began with the use by PHI of Exelon's planning timelines. Prior to systems integration, PHI's use of different platforms and accounts precluded full integration. In late 2016, PHI began using the Exelon processes for 2017 through 2021 plans, continuing to adopt Exelon processes in connection with the 2018 through 2022 Long Range Plan.

3. Capital Allocation under the Exelon Approach

The next chart depicts at a high level the processes used to determine capital allocations for PHI under the 2018-2022 Long Range Plan.

PHI/ACE Capital Allocation Process Flows



We discuss each of the steps depicted in the process below.

a. <u>Target Setting</u>

Target Setting/Spending Guidance

The Long Range Plans comprise the primary documents used by the Exelon entities to identify capital and O&M plans and budgets. Typical of Exelon's approach broadly to formalizing management processes, comprehensive policies and procedures cover the building of plans for future capital and O&M expenses. PHI has now begun working under most of them, but full process and procedure integration has not yet reached completion.

Exelon's approach to target setting in advance of the CAPEX plan building provides a particularly noteworthy foundation for planning. This "Capital and O&M Target Setting" step comes first in

Exelon's approach to preparing the five-year LRP and annual financial plan. In April and May of each year, PHI-embedded Finance persons assigned as "partners" to utility operating company leadership work with management (PHISCo Technical Services in the case of ACE) to identify known or expected changes in capital and O&M totals contained in the four remaining years under the existing Long Range Plan. PHI-embedded Finance and PHISCo management also identify and assess operational needs for the coming year, which will comprise the last of the five to be addressed by the next plan.

As Exelon describes its process in planning manuals, PHI Utility Finance personnel work with Exelon-level personnel (corporate Finance and Exelon Utilities leadership) and other relevant Exelon leaders "to develop Capital and O&M targets for the upcoming five-year plans that align with Exelon Corporation's goals and metrics", including but not limited to:

- Customer Rates
- Net Income
- Operational Goals
- ROE
- Dividend Payout
- Equity/Cap Ratio
- Funds from Operations (FFO)/Debt

An Exelon Portfolio Capital Allocation procedure indicates that Exelon sets specific capital investment parameters for its utilities. However, top level financial officers assigned to the PHI entities maintain that Exelon's planning foundational target setting activities have "not been fully integrated by PHI," stating specifically that no "top-down" spending targets come from the Exelon level to PHI to guide long range planning, and that PHI receives no specific spending instructions from executive leadership at parent Exelon or at Exelon Utilities, under whose overall direction PHI and in turn ACE operate.

The PHI-assigned finance executives involved emphasize that capital planning preparation for ACE and the other PHI entities begins from the bottom up, using the existing (prior year) Long Range Plan as a base. PHI operational managers build the capital plan from the ground up, using Capital Requests as building blocks. The process for creating these requests identifies projects for inclusion in the plan. These Capital Requests may add projects not included in the current Long Range Plan - - whether newly identified or failing to make last year's "cut." The requests may also seek changes in the timing, scheduling, and sequencing of projects that the current Long Range Plan does include.

The PHISCo VP - Financial Operations Director works with PHISCo Investment Strategy in discussing overall CAPEX spending levels for the PHI utilities, rather than working with Exelon Finance and Exelon Utilities as described in the Exelon handbook process stated above. Investment Strategy reports to the PHISCo Vice President – Technical Services. The incumbent holding the Vice President position recently came from a non-PHISCo Exelon utility. A joint effort involving PHI Finance and PHISCo Investment Strategy determines the "guardrails" for PHI utility capital spending (*i.e.*, acceptable ranges into which it should fall). Investment Strategy tracks historical spending levels and the forecasts from the existing Long Range Plan to inform the spending guidelines. Investment Strategy then provides capital and O&M spending guidance to managers with planning responsibility for the variety of functions and activities conducted to provide and support PHI utility operations.

Investment Strategy later analyzes, evaluates and prioritizes projects. This responsibility includes determining the "cut line" for eliminating projects (from the lists prepared under the bottom-up approach for identifying Capital Requests) as required to remain within the overall spending guardrails. In effect, and in the absence of specific instructions from Exelon leadership, overall PHI capital spending levels incorporated into the existing Long Range Plan provide de facto targets for spending in the coming year's five-year plan.

b. Capital Expenditure Origination

CAPEX Origination

The capital expenditure plan forms a central component of the Long-Range Plan, therefore serving as a pivotal planning document for allocation of capital to PHI. A group of 12 to 15 functional and operational PHISCo leaders have responsibility for each of the new Exelon capital expenditure budgeting categories used in the preparation of bottom-up capital plans. Exelon plans under the same capital expenditure categories for all of its utility operating units. PHI had previously used somewhat different categories.

PHI planning category "owners" operate in close coordination with the Investment Strategy group in building the PHI capital plan. Following the Exelon merger, the former PHI "process owners" have changed to "category owners", who are assigned by function under the Exelon system. An Asset Management group used to conduct many of these bottom up activities before the transition to Investment Strategy in Technical Services.

A PHISCo , Financial Operations Director provides dotted-line planning direction to approximately 25 employees embedded within the Utility Operations group. The Vice President (reporting to the PHI Chief Financial Officer) guides and assists the PHISCo operations groups in budget development, Long-Range Plan development, and monthly management reports and variance analysis. The Vice President coordinates capital and O&M budgeting activities PHI-wide, including each of the three utilities. PHISCo's Technical Services group manages the development of bottom-up capital budget requests, applying comprehensive procedures that Exelon has introduced.

The category owners correspond to the specific categories of CAPEX that Exelon has established for its six utilities, which differ somewhat from those previously used by PHI. Category management is key to the capital expenditure process. Category managers have responsibility for initiating, analyzing, prioritizing and presenting capital expenditure proposals. Category managers drive PHI's capital expenditure process; these managers report to the PHISCo Vice President, Technical Services.

Category owners initiate, analyze, and present capital projects and proposed expenditures for them. The category owners perform "Phase 1" of the bottom up planning and budgeting process. Throughout the year they identify and examine engineering and reliability needs and issues. They also consider the projects in the remaining four years of the current Long Range Plan issues. As they identify new or changed projects or programs, they prepare preliminary scopes, budget estimates, and projected need dates for Phase 1 of the process. They use a Project Approval

Requests (PARs) form, which provides a comprehensive and consistent means for identifying and comparing projects. The forms use three classifications: Baseline (routine and repair work), Annuals (Capex and O&M annual programs), and Projects. A number of Baseline and Annual capital programs cover ongoing, routine work that typically repeat yearly. Aggregate information about such repetitive work comes in the form of a capital budget line item each year.

The Exelon-introduced process now operative at PHISCo categorizes capital work by purpose, establishing the following distinct categories:

- Capacity Expansion
- System Performance
- Other Operations
- Bad Debt
- IT Business Unit
- New Business Connections
- Facility Relocation
- Smart Meter/Smart Grid
- Storm Fund and Reserve
- IT Corporate
- Corrective Maintenance
- Preventive Maintenance
- Customer Operations
- Regulatory Required

Some examples illustrate how these categories work. For example, the Capacity Expansion category includes capital work on feeders. Different factors may drive the need for such work; *e.g.*, analysis showing feeders reaching their limits, feeder inspections and worst-performing feeder ranking. Summer peaks frequently drive capacity projects, making June 1 of each year a typical in-service date milestone. Another example, System Performance, also has reliability underpinnings. It includes transformers, which undergo regular analysis. The Equipment Standards group ranks transformer equipment. One of their metrics, percent of capacity required under high load conditions, can drive capacity expansions as those percentages reach established limits, can generate investments in the processes and investments that expand transformer capacity. The Preventive Maintenance category also has a strong reliability connection, often providing relatively less expensive solutions (like animal guards).

c. Validation

Project Validation

Investment Strategy and the Financial Operations Director evaluate proposed capital projects and categories for inclusion in the baseline Long Range Plan and budget documentation. That documentation presents three classifications of capital expenditures (which include the 12-15 categories presented above), defined largely by recurrence and the manner of their presentation in budgeting documentation as it becomes aggregated. The "Baseline" classification comprises yearly-recurring repair work, presented as a number of capital line items. "Annuals" also consist of yearly recurring expenditures, involving both capital and O&M expenditures (*e.g.*, capital tools and tree trimming). The third, "Projects" classification consists of generally larger and non-recurring projects budgeted and scheduled individually (*e.g.*, a new substation).

Investment Strategy and Financial Operations review the Baseline, Annual and Project programs originated at the initial bottom up stage, retaining those deemed appropriate for inclusion in the aggregated, categorized list, as the Long Range Plan development process continues. For capital Projects, Investment Strategy uses the Project Prioritization Process to analyze and prioritize projects for inclusion in the first cut of the LRP. Valid Projects also enter the Exelon Capital Authorization Process (ECAP) at this point. This process covers the securing of actual spending authorization. The ECAP process operates separately from the development of capital plans for the Long Range Plan addressed here. ECAP focuses on continual management of capital Projects through the planning, development and implementation phases. We discuss ECAP further below.

Capital projects and programs require varying, sometimes substantial use of internal resources, with contractors performing significant roles, particularly for some project types. The Financial Operations Director works with the category owners on projects and programs validated for detailed consideration to build the required labor needs, assess them against current and expected personnel resources over the five-year plan period, and identify contractor resources needed to provide all the labor required.

At this point, the Financial Operations Director also incorporates corporate global assumptions in providing robust capital and O&M plan estimates. The factors they apply include things like inflation rate, fringe benefits (*e.g.*, medical, dental and vision), pension and post-retirement costs, and incentive pay.

d. <u>ECAP</u>

ECAP Project Authorization

Capital Projects surviving the Project Validation stage also enter the Exelon Capital Authorization Process, which provides the primary source of control in managing projects through the planning, development and implementation phases. ECAP applies to all projects above $500,000. PHISCo began using the ECAP process in late 2016 and started using the full process in 2017, continuing into 2018. ECAP supports the development of capital budgets and LRPs, but is a separate, self-contained authorization process that does not feed into the LRP.

ECAP operates distinctly (albeit addressing the same projects that form elements of capital budgets) from the capital budgeting aspects of Long Range Plan development. ECAP's focus lies on providing a comprehensive set of programs, systems, and activities that manage and control capital project performance from initiation through completion. ECAP provides a framework for balancing the technical and operational merits of each identified project with the economic benefits and goals of each utility. ECAP permits robust research, planning, review, and senior-management authorization for projects having significant financial and operational impacts.

Planners use the ECAP processes to evaluate and authorize capital projects consistently and in a highly structured manner. The process provides a source for controlling project scope and resourcing strategy. Providing this early, distinct, systematic, and technically oriented concentration on capital projects enhances the scrutiny applied to capital projects at their initial stage.

i. ECAP's Three Phases

ECAP employs a three-phase project authorization that relies upon business reviews prior to commitment to the project. ECAP reviews and authorization operates on a year-around, rolling process for capital projects. The sponsoring category owners (those described under in the "CAPEX Origination" section) have conducted a Phase 1 "first look" that seeks to identify issues surrounding project need and consequences, to draw preliminary project scope, and prepare budget estimates. The project owners then undertake Phase 2 activities, which includes advancing and completing engineering and project design, site preparation and civil construction initiation. Phase 3 work includes construction, installation, turnover, and closeout. Presentations are made by project owners in both Phases 2 and 3 within the authorization process; the presentations follow a standard format to improve consistency. Phases 2 and 3 of the process occur at the various levels of capital committees, depending on the dollar level of the project.

The category owners in Technical Services originate projects by completing Phase 1's Project Approval Request for all projects with expected costs greater than $100,000. Those over $500,000 undergo through the ECAP process a technical review supported by a structured, documented business case and a standardized PowerPoint presentation.

ii. Review and Authorization Levels

Projects passing from Phase 1 must undergo review by committees with approval authorities based on estimated project costs.

Beneath $5 million: The Project Review Committee (PRC) reviews the scope and details, costs, timing, and in-service date information for capital projects over $500,000 but less than $5 million. This committee at PHISCo includes a group of vice presidents. PHISCo's Vice President, Technical Services chairs the committee, and oversees the ECAP process as carried out at the PHISCo level. The Vice President, Technical Services makes determinations following review by the committee. Generally, monthly committee meetings include detailed presentations by the sponsors of projects requiring committee review. These detailed presentations typically include executive summaries, proposed solutions, business analysis, alternatives analysis, detailed cost estimates, risk analysis, cost/benefit ratio analysis, and a cost recoverability matrix. Similar types of presentations are made at all committee levels.

Between $5 and $15 million: PHISCo's Project Review Committee also performs an initial review, using similar information and approaches, of capital projects over $5 million in costs. Those between $5 and $15 million also undergo reviews by and require approval from the Project Authorization Review Committee (PARC), which consists of PHISCo's senior executives.

Above $15 million: Successively higher approval levels exist for capital projects with estimated costs above $15 million:

- Above $15 million up to $25 million: PHI CEO
- Above $25 million up to $50 million: Exelon Utilities CEO
- Above $50 million up to $100 million: Exelon CEO/Risk Mgmt Committee and PHI Board (Quarterly)
- Above $100 million up to $200 million: Exelon BOD Committee (Finance Risk Committee)
- Above $200 million: Exelon Board.

e. Evaluation and Prioritization

Evaluation and Prioritization

Investment Strategy works with the category owners to ensure consistent analysis and evaluations of capital projects and programs surviving initial screening. This stage of capital plan and budget development compares projects and programs within each of the 14 categories against others in the category. "Strategic fit" comprises the first screen, addressing questions such as how a candidate meets PHI and ACE system-performance planning criteria. Questions relevant to this screening include whether a candidate will add capacity to remove projected system overloads, replace existing equipment scheduled for retirement, or serve a longer-term strategy to improve service reliability. The analysis addresses the business benefits projected to result (*e.g.*, avoiding maintenance costs, improving distribution reliability, improving operations and maintenance flexibility). The analysis seeks, where possible, to quantify reliability benefits (*e.g.*, SAIFI, CAIDI and SAIDI performance metrics).

Project and program evaluation also considers alternatives to options requiring investment. Comparisons get made of the candidate versus alternatives such as:

- Lower- and higher-cost alternatives that roughly perform the same function but may have greater or lesser benefits;
- Upgrading versus replacing existing equipment;
- Doing nothing.

The comparison considers the estimated costs of alternatives examined, operations flexibility provided, and impacts on reliability metrics.

Investment Strategy provides structure for ensuring consistent analysis and financial discipline in evaluating and in prioritizing capital projects and programs. The process employs a standardized format and a specific model to perform cost/benefit analyses that support prioritization. Benefits calculation takes different forms for different project and program types, but use eight defined risk factors: executive commitment, PHI obligations, transmission issues, asset lead time, real estate, permitting and licensing, public acceptance and environmental stewardship.

We reviewed an ACE listing of projects having "final ratios" that express the results of cost/benefit analysis and relative ranking management used in plan and budget development. They display the results of PHISCo's work in developing the capital portion of the PHI work (LRP 1.0) in developing Long Range Plans for the five-year periods beginning in 2016, 2017, and 2018. PHI had used project relative ranking during the development of capital expenditures included in long-range plans prior to the Exelon merger, and continued this ranking through the 2018-2022 LRP process. The cost/benefit analysis for prioritization purposes comprises another area where PHISCo has yet to implement Exelon processes.

While central to planning, cost/benefit ratios do not comprise the only factor used to evaluate and prioritize projects and programs. Other factors considered include reliability performance improvement, addressing potential load concerns, equipment condition, status of the project work, and potential need dates. Review and discussion of the details of and comparison among projects and programs in each category use objective and in many cases quantified information, but also involve engineering and management judgment. PHISCo management reports that it has intermittently used relative rankings to develop capital plans since 2016.

Management has been moving toward incorporating risk scoring as a component of the process for prioritizing capital projects and programs. The risks of execution, success, not proceeding, and repair as an alternative lie among the risk dimensions under consideration. Other utility enterprises have developed "relative ranking models" - - an approach now under consideration by Exelon.

Following prioritization of five year plans developed by aggregating projects and programs developed on a bottom-up basis, they get entered into the LRP system. PHISCo Financial Planning and Analysis incorporates them into a preliminary version of LRP 1.0, also incorporating load forecast and transmission information.

f. Executive Review

Presentation to PHI COO

The 14 category owners then present capital and O&M plans to the PHI COO. The presentation and a working meeting on capital expenditures follow issuance of a first LRP 1.0 version that addresses each PHI entity. The Financial Operations Director and the Vice President of Technical Services work with the category owners to prepare presentations for this August review with the PHI COO. By this time, the PHI CEO and CFO also have access to summaries of the capital and O&M planning information under review. The presentation, discussion, and review of LRP 1.0 are designed to produce a refined LRP 1.0 for review by Exelon Utilities, which does the same for the LRP 1.0 versions produced by the other Exelon utilities. Category owners review the LRP 1.0 with the COO in a "working meeting", focusing on the CAPEX 5-year plan.

The August 2017 presentation to the PHI COO bore the title of "PHI Capital Spend Review, LRP 1.0 2018-2022." The agenda for the meeting to discuss it focused on the capital spend for "Proposed LRP 1.0". The five-year capital plan (the preliminary version of LRP 1.0) presented information by category, PHI company, and line of business. The 2018-2022 PHI capital expense total presented included a base request for $[redacted] and additional requests of $[redacted]. The ACE portion of the base capital request amounted to $[redacted] - - $[redacted] of that for the distribution business.

For each capital plan category, "Category Reviews" presented:

- Total Category Spend;
- Regulatory/Merger Commitments;
- Key Projects and Programs;
- Risks and Opportunities;
- 5% +/- Prioritization (which projects to add/cut to change spend by 5%);
- Requests for Target Increases (above the base request).

The Regulatory/Merger Commitments component identified and quantified merger commitments for all PHI jurisdictions, quantifying related 2018-2020 capital expenses for each. The Exelon merger produced spending obligations associated with ACE's Reliability Improvement Program (RIP). The ACE merger commitments for 2018-2020 were estimated to require $150 million of capital spending; the $214 million in capital proposed ran well above the commitment level. Management reported in comments on this report that a 2019 BRC settlement calls for RIP Phase-out in 2021. Chapter VI of this report (*Focused Operations Review*) describes the significant reliability improvements achieved at ACE in recent years.

The largest components among the additional $[redacted] requested involved Pepco 69kV and 13kV additions and transformer spares and in-line recloser telecommunications for all three companies. The amounts eventually accepted for presentation to Exelon Utilities were $[redacted], meaning that about $[redacted] of the $[redacted] of "additional capital expenditures" made the cut following the August presentation to the PHI COO.

Following COO approval, PHISCo Financial Planning & Analysis develops an early-September, full LRP financial statements incorporating all capital costs, O&M expenses, headcount, and other key assumptions. The CFO reviews these statements against key financial and credit metrics. The PHI CEO, COO, and CFO then reach agreement on a final PHI-level Long Range Plan (1.0).

g. Exelon Utilities Review

Exelon Utilities Cost Reviews

The PHI LRP 1.0 next goes to Exelon Utilities for a September cost review, along with those submitted from PECO, ComEd, and BGE. The cost reviews focus on CAPEX and O&M expense plans, taking place through extensive meetings conducted in two stages. The PHI CFO makes a presentation of the PHI LRP as part of the first cost review stage.

PHI's presentation to Exelon Utilities for 2018-2022 bore the title of "Exelon Utilities LRP 1.0 O&M/Capital/Headcount." Its capital plan shifted some projects from the previous year's Long Range Plan, and made refinements in some other projects and programs. The PHI capital expenditures proposed were $[redacted] over the five years. The PHI proposal also included cost reduction "Challenges" that, if successfully implemented, would reduce expenditures by $[redacted] for capital expenditures and $[redacted] for O&M expenses over the projected five-year forecast.

The presentation compared the final, approved capital budgets from the last four years of the current LRP to those same years proposed as the first four of the five years covered by 2018-2020 plan. The costs proved virtually identical, with an increase of about $[redacted]. A change in the modeling of AFUDC rates produced the change. The presentation identified a series of capital risks and opportunities, but identified their costs as "to be determined" later, except for major storm risks and the capital challenges. The presentation also identified all PHI capital projects exceeding $[redacted].

"Adjusted operating O&M expenses" are the second major cost category that is closely examined and compared to the previous year's LRP 2.0 (explained below). The adjusted O&M in the proposed LRP 1.0 was actually less than the previous year's final LRP by about 1.5 percent. The O&M decreases were primarily related to reductions in BSC costs, specifically baseline IT costs. Risks and opportunities were also identified for O&M expenses; however, most had dollar levels that were "to be determined" later. Synergies, O&M challenges and Storms were the only risks specifically identified and quantified.

As is typical, the PHI CFO followed the first stage presentations and discussions later in September with a revised plan submission to senior Exelon Utilities leadership. This revised plan initiates the second stage of the Exelon Utilities LRP cost review. This year's revision, coming through a presentation titled "Pepco Holdings 1.0" proved almost identical in capital plans and costs to the version presented two weeks earlier. Its only change adjusted AFUDC refinements marginally - - by a few million dollars in each year. The final PHI LRP 1.0 capital expenditures were [redacted].

Adjustments to O&M expenses proved more substantial, reflecting reductions from the material first presented earlier in September. Movement of a group of IT employees from PHISCo to EBSCo contributed to the reduction in PHISCo costs. An offsetting increase in utility depreciation and property taxes caused a net reduction in five-year PHI-level O&M expenditures of just under three percent. The O&M changes proved nominally more substantial than those for capital expenditures, but nevertheless did not reflect substantive change as much as they did movement of the same costs to another organization for budgeting purposes.

Consequently, Exelon Utilities' cost review processes did not produce "real" change in PHI capital expenditures. For O&M expenses, allocation corrections and refinements caused moderate reductions from the PHI-generated levels.

h. Parent Review and Approval

Exelon LRP 1.0 Approvals

Following Exelon Utilities review, the utility-level plans still must undergo review by senior executives at the parent level. This review examines utility plans with those of non-utility operations, in order to produce a single, integrated Exelon level plan that drives capital allocations among all Exelon entities and operations. The four, fine-tuned utility LRP 1.0s (PHI, ComEd, PECO and BGE) next become combined into an Exelon-wide LRP 1.0. We compared the PHI LRP 1.0 following Exelon Utilities review with the information about PHI contained in the Exelon-level LRP 1.0, finding no changes. Thus, by this stage, capital expenses as set forth in the original PHI-level LRP 1.0 submitted to Exelon Utilities remained essentially the same.

i. LRP 2.0

Exelon LRP 2.0 Approvals

Exelon's LRP 2.0 process "re-profiles" the approved subsidiary LRP 1.0 versions, through processes running from November to January. Capital expenditures undergo updates and refinements that respond to project timing and supply cost changes, emergent capital needs, and PJM projects. O&M costs also undergo updating with newer information. EBSCo also provides refined estimates of its costs. LRP 2.0 also updates pension information, based on annual pension reports received in January. The Exelon board of directors receives this LRP 2.0 update in early February.

We reviewed PHI's final LRP 2.0 for the 2018-2022 period (dated February 6, 2018). A "capital bridge" identified differences from the final capital plan of PHI's LRP 1.0. The updated and final capital plan totaled $[redacted] - - $[redacted] above the corresponding PHI LRP 1.0 amount. It reflected changes in timing, scheduling and cost estimates for certain projects and programs, with their increases offset by the capital challenges calling for cost reductions in capital and O&M. Additional PHI LRP 2.0 capital spending arose from a Delmarva transmission hardening project, additional AFUDC, an electric vehicle program, and updated IT capital expenditures allocated to PHI entities from EBSCo.

PHI LRP 2.0 O&M expenses increased by $[redacted]. These O&M increases offset almost all of the $[redacted] in reductions produced by the Exelon Utilities cost review process. Most of the O&M increase came from EBSCo cost allocation increases reversing the previous "corrections" for IT employees or from general increases in EBSCo IT costs charged to the utilities. Management reported that various "modeling adjustments" regarding PHISCo and BSC facilities charges and IT allocations caused numerous complications with forecasting O&M expenses in 2017, which have only recently been resolved in 2018.

Our review of the final, approved Exelon LRP 2.0 contents for the five years starting 2017 and the five years starting 2018 showed no material capital expenditure changes.

C. Conclusions

1. PHI and ACE have received increased capital allocations since the Exelon merger, corresponding to a curtailment in Exelon Generation capital spending.

Capital allocation has been strong for PHI and ACE since the closing of the Exelon merger, with each growing by 25 percent over the three-year period from 2015-2018. The legacy Exelon utilities have experienced a much lower capital allocation growth of six percent over the same period. Capital allocation growth for the legacy utilities had peaked with strong growth in the 2014-2016 period. The strong growth in the capital investment in utility rate base is consistent with Exelon's stated strategy over the past few years, and especially since the merger.

The capital allocation to Exelon Generation has dropped significantly since the Exelon-PHI merger, decreasing by 45 percent with the largest decreases coming in 2016 and 2017. These decreases conform to Exelon's stated strategy to drive capital out of the capital-intensive generation business.

2. We found no indication of material constraints on the ability to provide sufficient capital to support utility needs.

Increased capital for ACE has also clearly driven the major increases in reliability performance (see Chapter VI, *Focused Operations Review*). Reliability increases formed a key element of the commitments made in the context of the Exelon/PHI merger.

3. Exelon's capital allocation strategy emphasizes investment-driven, strong future growth in utility rate base and earnings.

Exelon's focus on utility investments has continued in forecasts for the next four to five years, as shown in its 2018 investor presentations to the financial community. Capital allocation to the Exelon utilities of $21 billion ($26 billion over five years) drives a forecasted increase in rate base of 7.4 percent over the next four years, with PHI maintaining a solid capital allocation of about 20 percent of Exelon's investment in each year. ACE is allocated from 3 to 5 percent of Exelon capital in the future, maintaining consistent utility investment.

The increases in utility capital allocations has come at the expense of Exelon Generation, as the holding company seeks to further drive capital out of the merchant generation business in the future. Capital allocations are reduced significantly in 2019 and after in Exelon's forecasts.

4. Exelon's Long Range Plan development processes provide an appropriate environment, structure, and processes for allocating to ACE capital sufficient to meet utility service needs.

Capital allocation for ACE is determined within the LRP and budgeting processes at PHI and Exelon. Capital allocation begins with the determination of target spending "guardrails" at PHISCo Investment Strategy that are utilized to guide the building of capital spending plans from the bottom-up. The LRP and budgeting processes proceed through review and approvals by senior executives at PHI, to cost reviews at Exelon Utilities, and finally to approvals of the LRPs at the top Exelon level.

The LRP process is performed within PHISCo, and its capital allocation is driven by the building of bottom up capital plans by employees dedicated to PHISCo departments. The PHISCo LRP processes provide a proper environment and structure focused on meeting the capital needs of ACE, DPL and Pepco. The LRP processes also ensure substantial involvement from the PHI COO, CFO and CEO, providing senior management oversight focusing on ACE capital needs.

5. ACE capital plans begin from detailed work from the bottom up and they focus appropriately on utility requirements.

The capital expenditure process for ACE is driven and managed by PHISCo "category owners" and the Financial Operations Director, who report to the PHISCo Vice President – Technical Services and CFO, respectively. Category owners have responsibility for initiating, analyzing and presenting capital expenditures. ACE and the other PHI utilities build their CAPEX and O&M plans from the bottom up to meet each utility's operational and service requirements. Importantly, the capital expenditure and LRP processes for ACE, DPL and Pepco are performed within PHI by PHISCo employees who are focused on meeting the utility service requirements of each PHI company.

6. PHISCo managers appropriately shape ACE capital allocation with spending target levels and prioritizations that protect ACE capital allocations.

PHISCo Investment Strategy and Financial Operations Director provide capital and O&M guidance to the category managers in building the spending plans for ACE, DPL and Pepco. These PHISCo managers consult to jointly provide the spending "guardrails", or acceptable ranges, for utility CAPEX and O&M spending. Investment Strategy tracks the levels of previous, historical spending, as well as the previous year's official LRP forecasts. Investment Strategy also analyzes, evaluates and prioritizes projects, and makes project cuts if the bottom-up requests exceed reasonable spending levels.

The project prioritization process performed by Investment Strategy provides another capital allocation tool that shapes the bottom up capital plans. Project prioritization adjusts the capital plan into a proposal that will meet the financial discipline scrutiny at PHI executive levels and eventually at the Exelon levels. Target setting and project prioritization by the PHISCo managers comprise key steps in providing adequate capital allocations for ACE. The targeting setting provides spending parameters for the category owners for building the bottom up capital plans for ACE, which is further refined by the project prioritization process.

7. ACE and PHI capital plans have been effectively proposed and approved at senior PHISCo executive levels, and in accord with capital proposals built on a bottom-up basis.

Annual presentations of proposed capital plans are made by the PHISCo category owners to the PHI COO. The category owners present their bottom-up capital budgets that had been prioritized and refined by Investment Strategy. After in-depth reviews and adjustments by the COO, the capital plans are also reviewed and approved by the CFO, CEO and the Board of Directors.

The ACE capital plans initially proposed by the PHISCo category owners was approved at the highest levels of PHI and the Board with minimal changes for both the 2017-2021 and 2018-2022 LRPs, protecting the capital needs of ACE.

8. Capital spending plans approved at the PHI level have been sustained during reviews and approvals at the Exelon Utilities and at the parent levels.

Capital plans of the PHI utilities undergo two additional layers of executive approval following the merger with Exelon. The PHI CFO presents the PHI LRP to Exelon Utilities in early September each year for a "cost review". The Exelon Utilities cost review processes did not result in substantive additions or subtractions regarding PHI capital expenditures from the PHI-generated levels and projects for either the 2017-2021 or 2018-2022 LRPs. The focus at Exelon Utilities is on operating performance metrics; EU is most interested in whether the PHI capital plan is the best investment to obtain high-level utility performance.

Liberty also reviewed the final Exelon LRPs for 2017-2021 and 2018-2022, and compared them to the final PHI LRPs for the same planning years. The intent of these comparisons was to determine if additions or subtractions to the PHI and ACE capital and O&M expenses occurred at the Exelon Corp. level. The PHI LRP and the Exelon LRP spending levels were almost identical in all years of the reviewed LRPs, denoting no substantive changes to the PHI and ACE capital plans at the Exelon Corp. level.

9. Major improvements already achieved at ACE and Exelon's strategy to reduce investment in its generation business make it appropriate to revisit utility capital investment plans. *(See Recommendation #1)*

Chapter VI, Focused Operations Review, describes the striking improvement in reliability measures at ACE in recent years. Management has not only succeeded in reaching merger-produced targets set for 2020, it has exceeded them. Even the "aspirational" goal of 1st quartile reliability performance has been met, with ACE already at or approaching measurements that only one in five comparable (per the established peer group) can boast. Programs requiring substantial capital expenditures have proven large contributors to this performance improvement, and credit is due to management at the PHISCo level and support from the Exelon Utilities and parent levels.

The parent company clearly plans to direct investment away from its generation sector and toward its utilities. Exelon has presented capital allocation priorities that target utility growth, return of capital through dividends, and debt reduction (at Exelon and Exelon Generation). Reduced Exelon Generation capital expenditures also comprise an Exelon capital allocation priority.

Considering the combination of ACE's already having achieved lofty reliability performance with Exelon's plans to transfer investment to its utility sector, it is prudent to look closely at plans to continue high capital investment levels at ACE. Adding investment-driven increases to already significant attention to high existing rate levels makes affordability and efficiency an important question in determining what levels of reliability excellence ACE should strive to attain in the future, and to what levels of investment will prove necessary to meet those levels.

Holding companies with large and capital intensive non-utility sectors can face pressure to divert capital from their utilities. We did not see that as a concern here since the merger, nor does it appear to comprise a significant risk across the coming five years or so, absent profound market dislocation or disruption. At the same time, caution calls for attention to the reverse pressure that a fundamental change in generation investment strategy may tend to produce, even if only subconsciously.

D. Recommendations

1. Revisit ACE capital investment plans after examining and producing a consensus on reliability aspirations and targets. *(See Conclusion #9)*

Recommendation #3 from Chapter VI, Focused Operations Review addresses the need to address the consequences for future program and investment planning resulting from the rapid progress and lofty status already achieved in reliability measurements at ACE. Spending plans have been founded on attaining levels or reliability already achieved and exceeded. In fact, targets have been reached and aspirations attained, as ACE has moved not only to, but into top quartile performance. Progress, giving due credit to management, now clearly places into question not only what it takes to maintain performance, but what targeted levels of sustained performance should apply. Recommendation #3 from the Focused Operations Review chapter addresses the revisiting of these two questions at the level of those who examine equipment design, configuration, and operation and their relationship to reliability measures like CAIDI, SAIFI, and minutes of operation.

From the capital allocation perspective, the broader question becomes how much capital to continue allocating to a system that appears already capable of delivering the kinds of performance that stakeholders and the BPU looked to at the time of the merger. An immediate top-level examination of continuation of capital expenditure levels is in order, while the more detailed examination recommended as part of our focused operations review proceeds. We recommend a focused review by top PHI and Exelon Utilities senior leadership to address the plans for ACE that will result from this year's LRP processes. That review should, at the least, substantially question the pace of network-related activities and expenditures involving ACE, seeking to determine whether there exist low-reliability-risk means to change the pace of work under capital programs designed to improve reliability. We believe it should be directly overseen by the Chief Executive of Exelon Utilities. Senior PHISCo operations and regulatory executives should also take direct and substantial roles.

The process should produce a report identifying all measures to produce short-term adjustments in ACE capital expenditure plans, quantifying the reductions they produce in planned expenditures, assessing likely impacts on existing reliability measures, targets, and aspirations. It should also describe (see the next paragraph) how senior leadership will guide follow-on efforts, the activities those efforts will include, and an identification of timing for completing them and deliverables to be produced.

Beyond this focused, immediate examination, and relying on prompt completion of activities and stakeholder dialogue needed to implement Recommendation #3 from the Focused Operations Review chapter, the future LRP processes undertaken for the following five years should reflect altered or re-established long-range reliability targets, and should reflect bottom up driven programs and projects designed to meet targets while avoiding expenditures beyond those reasonably connected to meeting them.

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Chapter VI: Focused Operations Review

A. Chapter Summary

This chapter describes our review of four ACE operations-related areas included as part of Phase 1 of our audit scope:

- Reliability programs
- Electric system resiliency
- Current restoration capabilities
- Distribution planning criteria and forecasts.

Outage Management: ACE has reported on the status of its Outage Management System as required by the BPU's May 29. 2013 Order at Docket No. EO12111950. The system complies with the requirements of N.J.A.C. Title 14:5-8.12 and it comports with good utility practice. Our review of system management tools found them appropriate. Operations Control Center organization, staffing, procedures, tools and practices are sound, but management should develop a formal response plan for addressing total loss of a major substation. We found restoration practices sufficiently focused on prioritization, management by personnel closest to the facilities and customers affected, yet efficient and well-controlled. Management performs effective tabulation and assessment of outage causes for use in identifying ways to reduce them. Management has effectively identified and assessed outage causes, taking industry-accepted actions to minimize their occurrence. We did recommend two actions: (a) ensuring that management's assessment of Advanced Metering Infrastructure costs and benefits provide sufficient focus on the technology's reliability benefits, and (b) preparing plans for restoring feeders in cases of total substation outages.

Reliability Reporting and Performance: A series of reporting requirements dating from 2011 through the Exelon merger order, codified by provisions of N.J.A.C., has generated a variety of annual and quarterly reliability performance reporting. ACE reporting has made timely provision of the required quantitative and narrative information. ACE has achieved reliability improvements as measured by System Average Interruption Duration Index (SAIDI), Customer Average Interruption Duration Index (CAIDI), and System Average Interruption Frequency Index (SAIFI) rapidly, placing its performance within the first quartile and beyond the levels targeted by Exelon merger commitments.

Reliability Improvement Plan Continuation: Management uses an appropriately structured, reasonably quantified, and data-rich approach to identifying alternatives and to selecting and prioritizing improvement projects. Project selection focuses on projects that provide the greatest reliability return (reduced numbers and minutes of customer interruptions) per dollar spent. ACE's commitment to, scope of, and efforts to execute programs under the plan have continued through the present. Those programs have largely driven improvements in reliability that have enabled ACE to reach (if it has not already attained) reliability levels better than four out of every five comparison group utilities can boast. Management does, however, need to pay close attention to whether good performance in 2017 eliminates the concern about high numbers of cases where the same customers experience large numbers of repeat outages.

The strong improvements in reliability, however, poses a dilemma for ACE and its stakeholders, when considering affordability. ACE plans to continue high levels of expenditures for the next five years, on top of: (a) rates already considered comparatively high, (b) aggressive state renewables and usage displacement requirements and goals, and (c) the potential addition of advanced metering infrastructure. Management's measurement of the value of reliability improvement is strong, but it is not clear that current dollar-valuing of reliability improvement will continue to reflect affordability issues. We believe it is time for a robust process incorporating clear means for quantitatively relating reliability improvements to resulting rates and establishing whether further improvement in reliability should remain a goal. We consider that process very likely to yield future expenditure reductions should current reliability levels be deemed appropriate, or a clearer sense of where and how to get to greater reliability levels and at what costs.

Existing Inspection and Maintenance Programs: We undertook a review of inspection and maintenance programs for each major equipment category, including sub-transmission, distribution feeders and other circuits, wood poles, substations, transformers, reclosers, and relays. We addressed their costs and performance since 2015, and examined the rates of success achieved in completing planned work. We generally found inspection and maintenance cycles appropriate and executed in accordance with the annual work levels those cycles required. Post-merger, Exelon has made some enhancements in both cycles and inspection activities. Particularly notable is the increase in on-time and decrease in backlogged work achieved overall subsequent to the merger. We did, however, find two material improvement opportunities. First, management needs to reduce the time it takes to complete repair or replacement of underground residential distribution (URD) cable, in order to reduce the potential for extended outages of customers reliant on old, increasingly troublesome facilities. Second, management needs to accelerate replacement rates for "rejected" poles whose continued reliability cannot be maintained by treatment or reinforcement.

Vegetation Management: A substantial body of BPU and N.J.A.C. requirements apply to the organization, resources, programs, methods, and reporting through which ACE conducts vegetation management. ACE has met those requirements, which encourage best practices, as they have changed since 2013, the beginning of our review period. ACE has a soundly structured vegetation management organization and resources, which makes effective use of outside contractors with strong business presences in the utility industry. ACE uses effective cycles to conduct regular work and it has performed work at rates consistent with them. ACE also responds to vegetation issues requiring off-cycle and immediate response. Management reports local and customer cooperation and it has very substantially increased the numbers of hazard trees it has been able to remove. Enhanced vegetation management has very substantially increased annual expenditures. Reliability results, although limited at present, support their production of reliability benefits. Nevertheless, with ACE reliability already having reached a strong position comparatively, the benefits of continuing enhanced vegetation management warrants careful analysis and a process for ensuring that continuing present activity levels will continue to have sufficient value.

Major Event Preparation and Response: The 12 reportable major storms that have hit the ACE service territory from 2013 through early 2018 have brought considerable attention to management's efforts to assess and plan for them as they approach, and to respond to them effectively during them and in their aftermath. Our examination of how management prepares for major weather events, identifies, prioritizes, and conducts restorations, and assesses the effectiveness of its performance after the fact generally found them in conformity with good practice and with the many recommendations that have come following BPU proceedings. The rationalization of PHI and Exelon approaches, procedures, and methods have produced some notable strengths, but we did find several areas of improvement.

The Emergency Operations plan has a comprehensive scope and sufficient detail, and management supports its pre- and post-event execution with sufficient dedicated resources and others with clear emergency-response assignments. We did recommend, however, that management include several important checklists in its Emergency Operations Plan and incorporate procedures to improve public and worker safety when energizing circuits downed by events. Monitoring of approaching events is structured and supported by effective sources of weather information. Management employs a robust Crisis Communications Plan, but its Customer Care Storm Emergency Response Plan requires updating. Effective web and mobile based platforms support customer communications related to storms, outages, and restoration times.

Distribution Planning: The ACE network makes appropriate use of equipment and approaches to sustaining reliability and voltage level. The National Electrical Safety Code guides distribution planning. Management appropriately incorporates contingency planning and redundancy in its criteria. Reliability Improvement Plan (RIP) programs have significantly influenced distribution planning. Designs are reasonably conservative and planning appropriately considers distributed energy resources. Continuing interaction with stakeholders is important in continuing to ensure effective and appropriate interconnection of these resources.

Load Forecasting: We examined load forecasting used to plan capacity reinforcements. Responsibility for managing the highest levels of the ACE system (230 and 138 kV) fall under the responsibility of the PJM Interconnection.

Appropriately designed and staffed organizations perform load forecasting and capacity expansion planning for ACE facilities. These organizations use comprehensive and accurate means for collecting load information for these purposes. The methods for preparing forecasts are comprehensive and well defined. However, they have produced forecasts exceeding actual loads by numbers and in amounts that call for examining changes to them. Management should complete an examination it now reports as underway to do so. That analysis needs to give careful consideration to the lack of overall growth and the comparatively small areas where ACE has experienced growth. It should also look carefully at sources and uses of information about future loads and the methods for using it to generate forecasts at the distribution system component level.

B. Background

1. Scope and Methods

This chapter describes and presents the results of our Phase One review addressing condition, status, performance, and cost of four primary aspects of ACE's distribution system and its operation:

- Reliability Programs

- Electric System Resiliency
- Current Restoration Abilities
- Distribution Planning Criteria and Forecasts.

Generally, our review period began with 2013. ACE's compliance with BPU reliability regulations and enhanced reliability reporting requirements formed a primary focus of our examination. Good industry practice guided a second focus of our work - - the identification of any cost effective improvement opportunities in these four aspects of ACE's distribution system and its operation.

We began our work with a review of a broad set of available information described in the Findings section of this chapter. The documents we reviewed included:

- Annual System Performance Reports (ASPRs)
- Reports of prior audits
- Other performance reports and associated quarterly reports
- Board Orders in base rate cases and infrastructure filings
- The documents related to reliability addressed in Chapter VIII, which addresses Merger Conditions.

We also undertook a detailed review of policies, practices, procedures, plans, and activities. We reviewed focused sets of data addressing distribution-system condition, status, trouble spots, and costs. We conducted interviews and a number of field inspections of equipment, condition, and work.

2. Task Structure

We addressed the following subjects:

- Outage Management and Restoration
- Operations Control Center
- Reliability Performance and Reporting
- Execution of Existing Inspection and Maintenance Programs
- Vegetation Management
- Inspection and Maintenance
- Life-Cycle Maintenance Philosophy and Practices
- System Resilience
- Planning
- Load Forecasting
- Current Restoration.

C. Outage Management

1. Background

We examined the System Operations Organization's processes and tools. The Outage Management System addresses identification of and responses to ACE outages. We examined outage causes reported by first responders, how ACE has addressed the principal outage causes, and the degree of management's success in reducing customer interruption numbers (CIs) and customer minutes of interruptions (CMIs).

We evaluated:

- Outage Management System and its conformity with BPU requirements and good utility practice
- Comprehensiveness of ACE's list of recorded outage causes
- Minimization of the use of "unknown" as an unknown outage cause code
- Capability of the Outage Management System to flow customer-reported outages electronically to dispatchers and first responders
- Outage Management System ability to provide outage and cause information in sufficient detail to support efficient, accurate analysis by reliability engineers
- Existence of a structured approach to determining the root causes of outages
- Operations Control Center and System Operations management
- Other key systems - - geospatial information (GIS), SCADA, energy management (EMS)
- Routine restoration procedures
- Daily outage analysis
- Customer outage communications.

2. *Findings*

a. <u>BPU Requirements Regarding Outage Management System Reporting</u>

The BPU's May 29, 2013 Order, in Docket No. EO12111950, (Recommendation No. 8) required ACE to submit to Staff a report detailing plans and timetables for specific technological advances and upgrades to its Outage Management System and computerized support systems, workflow process and workforce changes addressing the capture and reporting of damage and outages on a municipal basis. ACE's system operations tools include GIS, SCADA, State Estimator, Energy Management System, IVR, and Outage Management System. ACE reported to the BPU on July 29, 2013. See Chapter VI. ACE reported its use of an Oracle Outage Management System to analyze outage data secured from SCADA input and customer calls to identify likely outage causes. PHI undertook an upgrade to its Outage Management System in December 2012. Presently, no firm plans have been developed for any additional major upgrades, however, PHI will track the vendors' product development and update as appropriate. PHI was working on a project to integrate outage data with municipal boundaries and display this information on the ACE outage map.

N.J.A.C. Title 14:5-8.12 (Outage Management Systems) requires that ACE's Outage Management System consist at a minimum of a fully-integrated (GIS), a sophisticated voice response unit (VRU) (or for ACE, an Interactive Voice Response–IVR unit), a software driven outage assessment tool, and an energy management system (EMS), and system supervisory control and a data acquisition (SCADA) tool.

b. <u>Operations Control Center Organization</u>

The Operations Control Center performs real-time monitoring of systems status, and controls, ensuring safe switching for field personnel and for the systems. The center monitors and manages system outages and restorations, and, supported by first responders, provides outage cause data to support analysis of outage causes for use in designing efforts to improve reliability.

System Operations seeks to provide safe, efficient, and reliable management of transmission and distribution systems during normal conditions and during and after major events, such as severe storms, and to minimize customer interruptions and the amount of time that interrupted customers are exposed. Mays Landing, New Jersey serves as the location for the System Operations Control Center (Operations Control Center). Delmarva's counterpart provides backup, including for the Outage Management System, Energy Management System, and GIS systems. Remote computer servers provide another source of backup for the systems. A daily, 7:00 am outage analysis call and an 8:00 am executive management call review system conditions and expectations for the day. An Incident Command Center, located across the hall from the Operations Control Center, manages field operations before, during, and after major event restorations, using a dedicated team. The Manager of Construction and Maintenance serves as one of the leads of ACE's Incident Management Team. Backup designations provide for 24-hour coverage.

ACE Transmission System Operators monitor and control ACE's transmission system. They communicate on a daily basis with PJM - - the Regional Transmission Operator. Continual runs of system load, voltage, contingency, and stability provide an important source of data for monitoring system conditions and threats. The System Planning group conducts distribution system short circuit and load flow studies in evaluating distribution system reconfigurations and in forecasting peak loads.

A dynamic, prominent map displays ACE's transmission system. Lights coded for condition show system configuration. The Transmission Operators monitor the transmission system status using the wall map, alarms, and data provided by the Energy Management System/ State Estimator. Distribution Operators monitor and control the distribution system. Distribution Dispatchers control restoration work, which begins with the dispatch of first responders assigned to each district. Distribution Operators monitor the system real-time through alarms signaling abnormal conditions. Displays indicate tagged switching devices locked out for maintenance or construction. Distribution Operators provide daily alerts of abnormal configurations for the morning calls. Operators have individual consoles. A dispatch training simulator supports annual operations drills.

The Operations Control Director has responsibility for overall System Operations for all three Pepco Holdings utilities, including ACE. The Manager of ACE's Operations Control Center System Operations also heads Delmarva's System Operations. Three managers report to the Company's Director of Operations Control Center Operations; the Manager of Operations Control Center Operations, the Manager of Operations Control Center Planning, and The Manager of Emergency Preparations. The Manager of Operations Control Center Operations has seven reports; the Shift Managers, Transmission System Operators and Distribution System Operators, the Dispatchers, the Work Coordinator, the Arranger, the Trainer, and the Training Coordinator.

The Manager of Operations Control Center Planning has three reports; the Planning Engineer, the Database/Display Technician, and the Information Specialist.

c. Systems and Tools

System Operators require modern and appropriate electronic systems and tools to identify outages, help system operators address them, communicate expeditiously with first responders and customers, and provide outage data for analysis and reporting. These features improve resource management during outages, accuracy in identifying and communicating numbers of interrupted customers service, estimating restoration times, and communicating numbers and times of customer restorations. The Operations Control Center controls and monitors ACE's transmission and distribution system using these devices and applications:

- Outage Management System (OMS)
- Geospatial Information System
- Supervisory Control and Data Acquisition system;
- State Estimator
- Energy Management System
- Interactive Voice Response application.

The Operations Control Center uses three display systems - - one for Energy Management System, one for the Outage Management System, and another for mobile dispatch. Management is considering upgrading its Outage Management System to an Advance Distribution Management System (ADMS) in five years. Combining ADMS with Advanced Metering Infrastructure would enhance the accuracy of customer outage, load, and power status. These enhanced tools would improve System Operation's decision making, especially in restoration efforts occasioned by major storms.

Outage Management System: Advanced Outage Management Systems can map the electric distribution system digitally, associate customers with distribution facilities, associate customers out of service with the most probable interrupting device, and generate street-maps of outage locations, improve the management of resources during a storm, improve the accuracy of identifying the number of customers without electric service, accurately communicate the numbers of customers without electric service and improve the ability to estimate their expected restoration time, accurately communicate the number and when customers were restored and dispatch crews and troubleshooters via mobile terminal units.

ACE has been using a digital outage management system since about 2000, replacing its original system in 2007, using a more effective Oracle platform that has since undergone several enhancements. The current system is integrated with SCADA and various applications that models GIS distribution system electrical connectivity down to the customer's transformer. The Outage Management System takes outage data from the call center, and management groups and tracks outages; predict locations where protective devices likely operated, and estimate restoration times (ETRs). The Outage Management System ERTs can be canceled and manually adjusted by the first responder or others.

Distribution operator displays and the ACE web site show outage data and estimated restoration ties. A Mobile Dispatch System issues outage tickets to first responders' mobile data terminals. Capabilities include triggering calls to customers who have requested them and messages to BPU when outage thresholds are reached. The system permits manual adjustment or cancellation of estimated restoration times when indicated.

Geospatial Information System: A geospatial information system (GIS) digitally registers and can display transmission and distribution equipment, and supports outage management and system planning and engineering work. An integrated system supports design, construction, and electrical connectivity of the ACE distribution system. The mobile data terminals of ACE first responders include system data and traditional feeder maps for reference. First responders also carry paper maps. PHI had used SAP-PM for many years, converting post-merger to Exelon's Asset Suite. Engineering groups continue to work on completing the inclusion of all ACE system data into the new system, using field inspection work as a source for collecting the required information.

SCADA: Supervisory control and data acquisition (SCADA) control systems use computers, networked data communications, and graphical user interfaces to perform high-level process supervisory management. SCADA's ability to permit system operators to monitor and control network components (*e.g.*, transmission and distribution lines, feeders, automatic circuit reclosers, and substations) enhances outage identification and response. ACE network management integrates its SCADA capabilities with the Outage Management System and the Energy Management System. By 2013, management could control the majority of the ACE substation breakers via SCADA and the Energy Management System. SCADA capability now exists for all transmission substations and 88 percent of distribution substations. ACE is adding SCADA to one or two of the remaining distribution substations each year. SCADA capability to remotely operate automatic circuit reclosers (ACRs) has grown from about 50 to 70 percent since 2013. Management has also installed about 300 new reclosers, bringing the ACE total to 910. Expanding SCADA expedites restoration times by giving outage responders more system knowledge and functionality.

State Estimator: This tool displays status and configuration of all equipment at every facility, including locations not subject to direct monitoring. This tool uses the electric system model and SCADA data to depict locations not subject to direct monitoring, operating standalone (not connected to the Outage Management System).

Energy Management System: System operators use a General Electric platform to monitor, control, and optimize the performance of the transmission and distribution systems dynamically, as supply and load patterns change. Its first use came in 1998, with 2006 and 2012 upgrades, with another planned by early 2019. The system uses SCADA data for monitoring system conditions and for studying outage scenarios. The Energy Management System provides the Outage Management System circuit breaker and automatic circuit recloser status, enabling the latter to model outage and restoration activity real-time. Information Technology staff maintain the Energy Management System. Transmission and distribution operators and transmission, substation, and distribution reliability and capacity planning engineers use the Energy Management System and its historical load data collected and stored through "Pi Historian" for reliability and load forecasting. Use of the Energy Management System and State Estimator also supports contingency analysis, thermal and reactive constraint monitoring, load shedding analysis, reserve calculations, and other studies.

Interactive Voice Response (IVR): Efficient, timely communications with customers forms an essential element of effective outage management. Several communications channels gather customer outage data, among them customer self-reports. The IVR system accepts them, and it provides customers with outage status information. A West Interactive Platform hosts the system, which supports the high caller volumes that accompany large outages. Calls handled through the IVR generate outage tickets - - communicated to the Outage Management System for analysis and response and to first responders. Outage tickets arise from calls answered by customer service representatives, outage reports from mobile devices and the Internet, and by automated call handling. The Outage Management System records outage reports, and predicts the likely location of protective device activity and the number of customers affected.

d. Resources

We examined staffing of the Operations Control Center, finding numbers, qualification, and training sufficient. Operations Control Center staffing has increased following the merger, adding a dedicated trainer, an additional outage work coordinator, and two more shift managers. Staff conducts daily morning calls to address outages, restoration, and work status issues among management, center personnel, and reliability and engineering groups. Management has also implemented a more structured process for investigating and mitigating human performance errors. Effective restoration also depends on the availability of first responders. The next table lists on-call outage responders in each ACE operating area (sub-district). Staffing levels have remained constant since 2013, but management added an 11 pm to 7 am shift in July 2017. ACE adds on-duty first responders during holidays and storms.

Active First Responders

Location	7 am – 3 pm	3 pm – 11 pm	11 pm – 7 am	Total
Atlantic City	2	1	1	4
Bridgeton	3	2	1	6
Cape May Court House	3	2	1	6
Glassboro	4	2	1	7
Hammonton	2	1	1	4
Pleasantville	2	1	1	4
West Creek	2	1	1	4
Winslow	2	1	1	4
Total	20	11	8	39

e. Restoration Practices

Effective restoration response processes reduce SAIDI and CAIDI. Some utilities still use verbal outage tickets from dispatchers, followed by paper outage tickets or work orders. This process slows restorations. ACE's first responders receive outage tickets directly from the Outage Management System to their mobile devices. The Outage Management System and dispatchers evaluate the location and size of detected outages. Dispatchers coordinate restoration activities with field resources. Dispatchers send outage location data to first responders via the mobile dispatch system. First responders assess the situation on-site, transmitting details and restoration expectations and completion information. The transmitted information passes electronically to the

Outage Management System, the customer information system, the web site, and smart phone applications. This distribution gives dispatchers, back office personnel, and customers data appropriate to their needs on cause, equipment, action taken, and expected outage duration. Field resources enter all restoration-related data electronically in the Outage Management System.

First Responders have information from the mobile dispatch system or the dispatcher from which to identify outage protective device locations and assist in finding outage causes. They also have access to 68 line-mounted fault locators, 28 of them installed since 2013. Management plans to change the mobile dispatch system software in 2019 to make it compatible across all the PHI utility companies. Compatibility will improve work ticket communications with crews from other PHI utilities during major storm jobs. Linkage through the mobile data terminals in trucks with the Outage Management System enables dispatchers to know their locations, permitting dispatch of those not already in queue where more timely or efficient.

Distribution Operators monitor queues and repair completions. Dispatchers can track first responder locations. District personnel direct major-storm restoration work, dispatching first responders and crews according to outage queues for their own district. First responders who can make prompt repairs produce and execute a work order. The dispatcher prepares a work order for more time consuming repair work, and communicates with district operations personnel who send a crew, based on priority. Configuration controls require the recording of any system changes (*e.g.*, using a different size fuse) in the geospatial information system, and notification to engineering personnel.

f. Outage Cause Analysis

Effective outage management over the long term requires an appropriate approach to the identification of outage causes. Management has begun to perform outage cause analyses, and implemented daily and weekly discussions addressing outage reporting accuracy, cause, and restoration issues. We found attention to determining causes, implementing corrective actions, and monitoring their implementation status. First responders have a structured list for recording outages they address. Listing of “unknown” as a cause has been minimized, accounting for less than five percent of ACE’s 2017 customer minutes of interruption. Quality control processes seek to minimize use of the “unknown” cause category and to verify the accuracy of recording outage causes. Reliability Engineering personnel provide periodic training on cause reporting, its importance, how to identify outage causes, and the need for minimizing “unknown” as a default entry.

The next table shows the reduction in the number of outage minutes whose cause management classified as unknown. The next table shows the number of CMI causes indicated as unknown since 2013.

CMIs with Unknown Causes: Major Events Excluded

Year	Total CMI	Unknown	
		Share of Total CMIs	CMI
2013	72.2	7%	5.2
2014	58.6	5%	2.9
2015	46.0	5%	2.1
2016	67.6	6%	3.8
2017	34.6	4%	1.3

Interruption minutes in millions

Technical personnel analyze outage data, using the results to identify actions for reducing outages from significant, recurring causes. Management has found equipment failures, human error, vehicle hits, animals, and lightning as top causes of controllable outages. Major equipment-related causes include failures of automatic line splices, porcelain cutout switches, and substation lightning arrestors. Significant reductions have occurred between 2013 and 2017 in customer minutes of interruption:

- Total: 52%
- Trees: 54%
- Equipment: 39%
- Hits: 45%
- Weather: 72%
- Animals: 26%
- Unknown: 75%.

Outage coding plays a central role in managing the worst-performing feeder program (termed the Priority Feeder Program at ACE). Analysis of reported causes helps drive selection of worst performing feeders. Management uses the following equipment-type structure for coding equipment failure causes.

Equipment Failures Selections

ACR	Fuse	Pole	Termination
Bushing	Insulator	Regulator	Trans closure
Cable	Joint failure	Relay	Transformer
Capacitor	Lightning arrestor	Sectionalizer	Pad Transformer
Connection	Meter	Service	Trans - subsurface
Cross arm	Meter – primary	Splice	Wire – bare
Cutout switch	Mole	Street light	Wire - covered
Circuit Breaker	None	Switch	
Elbow Insert	PAC/Spacer cable	Switch-gang op	

It takes analysis to identify lightning as the likely cause of an outage. The Central Reliability Engineering (Reliability Programs group) uses lightning strike data obtained from a professional locator service (the Fault Analysis and Lightning Location Service, or FALLS), to analyze outage events initially coded to "lightning." Management scrutinizes outages initially coded as "unknown" and it discourages the use of a "best guesses" or speculation in designating causes. Reliability engineers investigate outage events to determine most likely causes. All significant outage events of "unknown" causes undergo discussion at the next day's early System Operations call. A Technical Services Operations Coordination call also reviews such events to identify potential follow up actions.

Operations Control Center distributes daily logs of outages for the previous day, for accuracy and completeness review. Leadership, operations control center, engineering, construction and maintenance, and all support participate in a Daily 7:00 am Operations Call. The group's discussion of outages focuses on the previous day's causes and restoration times for outages generally affecting more than 500 customers, those exceeding four hours, and customers experiencing multiple outages.

A 7:30 am Technical Services (Central Engineering) Call examines relay information, and determines follow up remedial actions for the previous day's outages. The group assigns follow-up actions as appropriate (*e.g.*, to district personnel to perform an additional inspection, to engineering to review coordination, to electric maintenance to review automatic device operation, to Standards to review equipment failures). This group also monitors previously determined follow up actions. The 8:00 AM Conference Call with the PHI Leadership (COO) discusses outages of greater than 1,000 customers and 4-hours duration. A Weekly Outage Report presenting corrected daily data provides a basis for the Thursday Outage Reliability Call. Reliability engineers, distribution engineering, and construction supervisors and managers verify the data and discuss remedial actions.

Management has, since 2016, conducted "apparent cause" investigations for outages exceeding 500 customer or four hours, and for some not meeting these thresholds. More intensive, root-cause investigations (RCIs) can follow events affecting large number of customers, having longer durations, involving human performance issues, producing significant safety or cost consequences, resulting in regulatory violations, or involving customers experiencing multiple interruptions. Mandatory root cause investigations follow interruptions to 10,000 or more customers for three hours or more or significant damage resulting from energizing equipment with grounds attached, significant damage to property, when three or more employees are hospitalized; or for more serious employee physical injuries or death. Management employs the industry-accepted TapRoot® RCI process for examining outages. An action-tracking process manages schedule and action tracking.

g. Sources and Changes in Customer Minutes of Interruption

The next table ranks 2017 ACE outage causes by CMIs. Equipment failures, trees, equipment hits, weather, and animals caused almost 90 percent of 2017 interruption minutes.

ACE 2017 Causes of Outages (CMIs)

Cause	CMIs	Share
Equipment Failure	9,646,496	27.8 %
Tree	7,641,247	22.0 %
Equipment Hit	5,611,700	16.2 %
Weather	4,078,898	11.8 %
Animal	3,697,184	10.7 %
All Other Causes Not Listed	2,294,008	6.6 %
Unknown	1,291,241	3.7 %
Overload	242,594	0.7 %
Dig In	150,048	0.4 %
Total CMIs	34,654,415	100.0 %

The next table shows changes in the top four causes since 2013 - - trees, equipment failures, equipment hits, and weather.

Top Four Causes of CMIs: Major Events Excluded

Year	Total	Trees		Equipment		Hits		Weather	
	CMI	%	CMI	%	CMI	%	CMI	%	CMI
2013	72.2	23%	16.4	22%	15.8	15%	11.2	21%	15.3
2014	58.6	32%	18.7	20%	11.8	16%	9.4	17%	9.9
2015	46.0	22%	10.1	31%	14.3	15%	7.0	N/A	N/A
2016	67.6	27%	18.3	22%	14.7	11%	7.1	25%	16.9
2017	34.6	22%	7.6	28%	9.7	16%	5.6	12%	4.1

Interruption minutes in millions

The percentages of total CMIs caused by trees, equipment failures, and equipment hits have not changed greatly since 2013; however, each has witnessed a significant decrease in minutes of interruption over that period. The total number of interruption minutes fell by more than half from 2013 through 2017. We discuss the equipment-failure category in detail below. Attention to repeat pole-hits and layout changes to reduce recurrence has assisted in producing the 45 percent reduction in interruption minutes due to vehicle hits since 2013.

First responders to outages install animal guards to prevent recurrence of raccoon, squirrel, bird, and snake contact with energized line and substation equipment. All newly installed distribution transformers, line reclosers, and substations include animal protectors. Fusing critical feeder equipment, adding animal protection, and using insulated equipment leads form part of two major reliability improvement programs - - the Worst Performing Feeder and the more generally applicable Comprehensive Feeder programs. Animal contact can have large customer impacts at substations. The Atlantic Substation Animal Protection program has added animal protection to 30 substations with all slated for the addition of such protection. Management has also installed as a pilot an electrified animal fence inside one substation.

h. <u>Preventing Equipment Failures</u>

We paid particular attention to equipment-failures, a major cause of outage and one subject to significant management control. The next table breaks down the types of equipment failures that have caused outages.

Leading 2017 Equipment-Failure Interruption Causes

Failure Type	CMI	Failure Type	CMI
Lightning Arrestor	1,417,115	Cable	916,377
Connection (loose)	1,042,200	Transformer	853,279
Cutout	962,238		

Interruption minutes

Construction and maintenance activities can require customer outages when management cannot transfer loads to other sources temporarily. However, it is not always possible to conduct the system upgrade work without temporarily affecting customers. Planned outages for construction and maintenance activities between 2013 and 2017 had a minor impact (about 2 percent or less) on each year's total customer minutes of CMI. However, these activities had more impact of each year's total customer interruptions (CIs), contributing to 8.6 percent and 6.9 percent of total CIs in 2016 and 2017 respectively.

Management can control outages from equipment failures through inspection, corrective maintenance, preventive maintenance programs, and reliability programs. Management has approached replacing possibly problematic equipment systematically, based on inspection findings, and on priorities. Management categorizes all equipment failure outages in its Outage Management System, identifying the equipment type (*e.g.*, cutout, transformer or service connection). Ongoing analysis of outage trends supports the development of mitigation programs can be implemented. ACE has experienced a number of failure sources common in the industry.

Lightning Arrestors: For example, ACE has experienced seven failures of one type of 12 kV lightning arresters in substations since the summer of 2011, each damaging the feeder breaker below it. These events produced interruptions to more than 7,000 customers, generating more than four million minutes of customer interruption in total. Management attributed the extensive damage caused by the arrester failure to pre-2010 design of substations. An ongoing Arrestor Relocation Program now moves feeder arresters in at risk substations - - a program with a 2018 budgeted cost of $535,500. Management also replaces older arc-gap type lightning arrestors with modern Metal-Oxide Varistor (MOV) lightning arrestors when it identifies "lightning caused" outages on its distribution feeders.

Automatic Splices: ACE has also experienced industry-common outages from automatic splices (particularly in areas of salty air). Failure to verify splice-installation quality can lead to corrosion not visually identifiable. Management has used infrared and ultrasonic inspections during its overhead-line inspections to identify failing splices. Management is currently evaluating several industry offerings for corrosion resistant automatic splices, expecting to begin installing them before the end of 2018.

Porcelain Cutouts: Failures of a specific brand of porcelain cutout switches comprise another common cause of utility equipment failures. ACE made extensive use of this type of switch - - in fact, exclusively until 1998. Salt spray contaminated the surface of some of the porcelain switch insulators, leading to some pole fires. Management has for the last ten years installed silicon insulated load break cutout switches. Management has used its periodic overhead-line inspections to replace porcelain switches showing conditions placing them at risk.

Underground Residential Distribution Cable: Such failures generally require more repair and restoration time than do overhead line faults. ACE's distribution system includes some 23 kV primary mainline underground cable in Atlantic City, and some section of 12 kV cable in mainlines in specific locations. ACE also frequently serves customers, usually in housing subdivisions, from Underground Residential Distribution (URD) cable systems. ACE has used typical direct buried cross-linked polyethylene (XLPE) insulated single strand cables. The poor quality that typifies insulation in older utility installations makes them susceptible "treeing" from water intrusion, which leads eventually to problems. The Newer XLPE currently used by ACE does not suffer this result. Each of ACE districts includes linepersons specializing in repairing and replacing failed underground residential cables.

It would be cost prohibitive, considering the gain in reliability produced, to replace all of this older cable. Therefore, working to reduce time to repair or replace faulted cable offers the only practical solution to minimizing outages. The next table shows the number and durations of underground cable faults.

Primary Cable Faults (primarily URD)

Year	Events	Duration (Hours)		
		Min.	Max.	Average
2013	417	0.2	28.1	4.4
2014	439	0.2	36.8	4.5
2015	550	0.2	141.7	11.4
2016	486	0.1	56.2	4.7
2017	373	0.2	37.7	4.0

2015's 141.7-hour outage resulted from the Bow Echo event of June 23, 2015. Extensive tree damage delayed identification of the cable's failure pending restoration of overhead feeders. Remediation of the cable failure came under one of the last Bow Echo-related customer restoration orders completed.

Looped underground residential distribution cable systems face greater exposure when one of the sections is open (*e.g.*, has failed), leaving the other as the only remaining source. The Operations Control Center monitors all abnormal system configuration conditions, including open loops. Monitoring includes responsibility for and status of actions to correct conditions causing open loops. Management evaluates cable sections that fail, determining whether to repair or replace. A 28-day goal for completing repair or replacement exists, but is not always met. Factors like waiting for a flow mole or a third-party contractor, frozen ground in the winter, or a major storm event can cause repairs to exceed the goal.

i. Relay Protection

Management uses circuit breakers to protect ACE's substation transformers from faults. Protective relay tripping, reclosing schemes, and SCADA control and protect these circuit breakers. Protection Engineering (T&S Engineering) and Distribution Engineering work together to coordinate substation relays with protective devices installed on feeders (*e.g.*, fuses and automatic circuit reclosers). Ongoing replacement of legacy electromechanical relays and oil circuit breakers with more functional microprocessor relays and more reliable vacuum and SF6 gas circuit breakers has improved coordination between substations and the feeders they serve.

Weekly outage reviews by Reliability Engineers address coordination effectiveness and any failures of protective devices to function, identifying corrective actions required. Periodic testing by Relay Operations of substation relays and relay schemes also takes place. Periodic Relay Operations' preventive maintenance activities test relays and functionally test relay tripping and reclose schemes. In November 2017, ACE Relay and Protection implemented a formalized Peer

Group checking process for new relay settings. The process includes a form, for each type of relay scheme, which must be completed by two parties prior to relay setting changes.

3. Conclusions

1. Outage Management - - ACE has reported on the status of its Outage Management System as required by the BPU's May 29. 2013 Order at Docket No. EO12111950; the system complies with N.J.A.C. Title 14:5-8.12.

ACE's July 29, 2013 report to the BPU satisfied this requirement. Our review of the system's capabilities found them compliant with BPU requirements and with good utility practice.

2. Outage Management - - The capabilities of ACE's Outage Management System conform to BPU requirements and to good utility practice. *(See Recommendation #1)*

ACE has appropriately automated tools, which it applies to identify, manage responses to outages, and promote timely and effective restoration activities. Its systems and tools comport with the requirements of N.J.A.C. Title 14:5-8.12. Implementation of Advanced Metering Infrastructure (AMI), now under review by management, has significant potential for improving customer outage identification and verification of restoration, especially for major storm events.

3. Outage Management - - Operations Control Center staffing, qualifications, procedures, and practices reflect good utility practice, but we did not find a documented contingency plan for addressing loss of a major substation. *(See Recommendation #2)*

Sufficient numbers of appropriately qualified and trained operations personnel exist and they operate under appropriate procedures using effective tools. We found appropriate attention to system conditions and events and to providing night coverage for first responders. However, management lacks a documented plan for addressing restoration following total loss of a major substation.

4. Outage Management - - Management has effective restoration practices, whose application promotes the minimization of SAIDI and CAIDI.

Systems, procedures, and practices promote well-prioritized dispatch and efficient restoration, while providing appropriate controls.

5. Management effectively manages the assessment of outage causes for use in addressing major, recurring causes.

We found an appropriately comprehensive and detailed list of outage causes, support for its use by first responders, sufficiently low use of "unknown" as an outage cause, effective tabulation of causes, and attention to reducing outages resulting from major, recurring sources. We reviewed the actions taken to prevent outages, finding effective and sufficiently proactive efforts. In particular, we found efforts to identify, respond to, and prevent equipment-related outages consistent with strong utility practice.

4. Recommendations

1. Provide a thorough, robust identification of the benefits of AMI, assess roll-out and sustaining costs in detail, value AMI's reliability benefits carefully, and offer detailed estimates of roll-out costs under a range of scenarios. *(See Conclusion #2)*

PHI and Exelon have substantial experience in applying AMI at other utility operations. Moreover, increasingly wide-spread use of AMI across the country provides a wealth of comparative information from utilities, customers, and for their other utilities. A major complication in assessing the value of AMI in relation to its costs lies in assessing the reliability benefits it can produce. An analysis overly focused on direct comparison of costs incurred versus costs saved (even if it considers indirect cost benefits; restoration resource efficiencies, for example) can make the change appear costly. In terms of outage management, AMI's benefits can include enhanced customer information, and reduced outage durations.

2. Prepare comprehensive, documented plans for restoring feeders in cases of total substation outages. *(See Conclusion #3)*

Systems, procedures, and tools generally comprise a strength of the Operations Control Center, but not in this single case. Prepared switching plans should exist to address feeder restoration in cases of complete, lengthy losses of major substations.

D. Reliability Improvement

1. Background

Overhead electric distribution feeder systems consist of elements that include conductors, poles, cross arms, wires, insulators, switches, and other attachments, (*e.g.*, transformers, lightning arresters, automatic circuit reclosers (ACRs), and capacitors). Since age and weather affect the condition of each feeder element differently, good utility practice, the National Electrical Safety Code (NESC), and the N.J.A.C. necessitate that each utility apply inspection and corrective maintenance programs that ensure that inspections and corrective maintenance, and, in some cases, preventive maintenance and replacements, are appropriately thorough and timely to cost effectively minimize overhead equipment failures.

No one acceptable formula exists for designing inspection and maintenance programs. Design takes significant judgment, but should be informed by comprehensive data. Asset management engineers should consider equipment age and condition, operating conditions, and past failure history in program design. Aged equipment, operating under severe conditions or exhibiting poor operating history may require inspection and maintenance work more often. Inspection and maintenance programs should include maximum inspection, corrective maintenance, and preventive maintenance cycle times, but should have the flexibility to shorten maintenance cycles (*e.g.*, as when triggered by deficiencies identified by inspections, tests, or proactive maintenance).

In this Chapter, Liberty examined ACE's compliance to the 2015 N.J.A.C. 14:5-8.6 regulations regarding distribution system inspection and maintenance programs and reporting in its Annual System Performance Reports; how ACE applies priorities to its corrective maintenance (CM) work; whether the Company's distribution feeder inspection, pole inspection and treatment, and pad mount transformer inspection programs, and underground residential distribution (URD) cable replacement practices, are good utility practices; whether the Company's inspection and maintenance strategy is good utility practice, and whether ACE's protection engineering and relay maintenance practices are good utility practices.

Liberty also conducted inspections of eight Liberty selected distribution worst performing feeders, with the purpose of evaluating general conditions and reporting deficiencies.

2. Findings

a. Compliance with Reporting Requirements

Docket No. ER09080664: The May 16, 2011 Order required an ACE Reliability Improvement Plan program targeting a SAIFI value of 1.30 and a SAIDI value of 160. The Order required reliability improvement reporting against a number of specific measures, as part of ACE's Annual System Performance Reports. These reports have included the required information, beginning with ACE's 2013 Annual System Performance Report.

Docket No. EO12070650 and Docket EM14060581: The February 20, 2013 Order in Docket No. EO12070650 required ACE to increase the percentage of priority feeders (Worst Performing Feeders) addressed in each of its operating districts from four to eight percent, and initiate reporting and tracking of hazard trees. ACE made the required changes to its Priority Feeder program, and included hazard-tree reporting, beginning with its 2014 Annual System Performance Report. The Exelon merger order (February 11, 2015 Order Approving Stipulation of Settlement (Docket EM14060581)) required ACE to continue its Reliability Improvement Plan programs and reporting on them until at least to the end of 2021.

The Board's Annual System Performance Reports Order requirements have been codified, requiring that ACE Annual System Performance Reports:

- Compare prior-year SAIFI and CAIDI performance with targets,
- Summarize company-wide and operating district SAIFI and CAIDI performances and major causes of interruptions for the past 10 years.
- Summarize reliability programs and any changes to them, including inspection and maintenance program, the Worst Performing Feeders program methods and corrective actions.
- Provide lists of feeders addressed in the past year and mitigation work completed and lists of feeders to be addressed in the next performance year.
- Summarizing power quality and stray voltage programs.
- Addressing technology initiatives to improve reliability.
- Providing numbers and training of bargaining unit and non-bargaining unit personnel.
- Summarizing vegetation management work and hazard tree information.
- Summarizing each major event.
- For operating districts not meeting minimum level reliability levels for a calendar year, an analysis of the service interruption causes, patterns, and trends and a description of the corrective actions takes and target completion dates.

ACE's Annual System Performance Reports have included the information required. In 2015, as required by the 2015 N.J.A.C., the Company began including a tabulation of its inspection and maintenance programs and a report table of contents.

The February 20, 2013 Order in Docket No. EO12070650 required ACE to provide Quarterly Outage Reports addressing all sustained outages experienced. The BPU also required ACE to provide quarterly reports on substations exceeding minimum reliability levels. Section 14:5-8.7 of the 2015 N.J.A.C.- New Jersey Electric Distribution Service Reliability and Quality Standards codified these reporting requirements. ACE has submitted quarterly lists of substations SAIFI and SAIDI. ACE has also submitted submitting Quarterly Detailed Feeder Outage Reports. These reports contain the information required.

ACE has also submitted Quarterly Reliability Improvement Plan Progress Reports, since at least August 2013. These reports include graphic presentations for BPU Staff and Rate Counsel, showing reliability improvements made under the plan programs and activities. Graphic depictions have included monthly SAIFI, CAIDI/SAIDI, and CEMI performance company-wide and by district, tree reliability, and reliability spending. These reports have presented Reliability Improvement Plan spending, weather impacts, trees removed, comparison of ACE reliability performances with that of other utilities in the IEEE utility reliability survey, and explanations of causes of low district SAIFI and SAIDI performance.

b. ACE-Level Reliability Targets and Performance

Docket No. ER09080664's May 16, 2011 Order addressing the Reliability Improvement Plan targeted a 2016 value of 1.30 for SAIFI (average number of interruptions per customer per year) and a value of 160 for SAIDI (average minutes of interruption per system customer per year). Reaching these targets would produce a 20 percent improvement in SAIFI value and 25 percent for SAIDI, as compared with 2009 levels. The Order and N.J.A.C. Title14:5-8.8(g) have required the following programs as part of the Reliability Improvement Plan:

- Enhanced Vegetation Management
- Priority (Worst Performing) Feeders (increased from four to eight percent in each district)
- Load Growth (Distribution Capacity Expansion)
- Distribution Automation
- Feeder Improvements (Comprehensive Feeders)
- Substation Improvements.

The programs that ACE reported in 2015 and that it continues to execute include:

- *Worst Performing Feeders*: identifies least reliable distribution feeders for corrective action to improve individual and overall distribution feeder reliability.
- *Comprehensive Feeders*: identifies non-Worst Performing Feeder Program feeders where remediation would improve measured system reliability.
- *Distribution Automation*: deploys automatic sectionalizing and restoration (ASR) schemes as part of efforts to deploy smart grid technology, seeking system reliability improvement by automatically isolating faults and restoring unaffected feeders.

- *Vegetation Management*: includes tree pruning or trimming, tree removal, and selective application of herbicides, with trimming to the first protective device; typically focused on areas most susceptible to tree related causes.
- *Underground Residential Distribution Cable Replacement and Enhancement*: replaces cable to minimize failures; includes replacement, but ACE does not enhance cables, by treatments intended to extend equipment lives.
- *Overhead Feeder Inspections*: includes visual, ultrasound, and infrared maintenance inspections on overhead backbone feeders to identify deficiencies.
- *Multiple Device Operations Remediation*: The Program is designed to investigate, and replace or upgrade, as needed, protective devices that have been activated or operated more than three times in the past 12 months.
- *Other Distribution System Inspections*: includes Ground Line Pole Inspection Program to assess pole condition through visual or invasive (*e.g.*, boring) inspection and the Substation Inspection Program to assess power transformers, circuit breakers, switchgear, substation capacitor banks, and various support system conditions.

ACE has continued to apply these programs and it has performed better than the 1.30 SAIFI and 160 SAIDI targets in 2015, 2016, and 2017. The next table summarizes that performance in comparison to the targets set in 2011 for achievement by 2016. The measures shown use the New Jersey Major Event Exclusion Criteria.

ACE System Reliability Measures vs. 2011 Targets

Index	2013	2014	2015	2016	2017	Target
SAIFI	1.45	1.11	1.03	1.18	0.86	1.30
CAIDI	93	98	83	106	76	120
SAIDI	134	109	86	126	65	160

ACE's 2016 Annual System Performance Report cited a substation construction project, a bus outage caused by a relay issue, and cable cut at a substation as the drivers of elevated 2016 SAIFI SAIDI measurements, which nevertheless remained below the levels targeted for 2016.

The stipulation of settlement leading to the commitments made for the merger with Exelon required improved levels for required reliability measurements. SAIDI was eliminated as a targeted measurement, although management has continued to track it for internal use. Exelon committed that ACE would, continuing its Reliability Improvement Plan programs achieve by 2020 a *measurement of 1.05 for SAIFI and of 100* for CAIDI, again excluding Major Event Days. The next table shows that ACE has already met and exceeded the measurements it must reach in 2020.

ACE System Reliability vs. Exelon Merger Target

Index	2013	2014	2015	2016	2017	Target
SAIFI	1.45	1.11	1.03	1.18	0.86	1.05
CAIDI	93	98	83	106	76	100
SAIDI	134	109	86	126	65	N/A

Citing Exelon's aspiration to achieve first quartile SAIFI and CAIDI performance, the BPU's order in the Exelon/PHI merger proceeding (see the discussion of Commitment No. 13 in Chapter VIII, Merger Conditions), the BPU required an explanation of how ACE could achieve these results. Using Exelon's panel of 26 utilities, first quartile performance based on 2013 data would equate to a SAIFI value of 0.85 interruptions and a CAIDI value of 91 minutes. The base merger commitments set a higher performance bar than that established in 2011. Meeting this first quartile aspiration would take performance to an even higher level. The other Exelon operating utilities have reached first quartile performance. Exelon manages them under what it terms the "Exelon Model," major features of which include a very comprehensive set of operational performance metrics measured and compared among all its operating utilities, including ACE, and a peer group process that takes a comprehensive, structured approach to applying best practices across them. (See Chapter IX, *Executive Management and Corporate Governance*).

ACE reported achievement of first quartile CAIDI performance in a September 23, 2016 report -- 83 minutes versus the standard of 91. ACE proposed at that time to reduce by 2020 its SAIFI measurement of 1.03 to the 0.85 1st quartile level. Management listed these programs, starting in 2017, as its basis for attaining improved SAIFI performance:

- Accelerated Recloser Installation
- Accelerated ASR Deployment
- Smart Fuse Installations
- Additional Feeder Investments.

Management estimated costs of $117.2 million through the end of 2020, including $64.2 million from its already-approved five-year plan, $25 million of additional funding proposed by the Company in the 2017 five-year plan, and $28 million of incremental funding. Management included similar programs in its 2017 PowerAhead Program for improving resilience during major storms.

Using more current Exelon peer group measures (for 2016) indicates that attainment of 1st quartile performance may not require additional funding through 2020. ACE's 2017 CAIDI performance fell well within both the 2013 and 2016 measurements. ACE's 2017 SAIFI performance nearly met the 2013 peer group levels and exceeded the 2016 levels, as the next table demonstrates. Thus, ACE has already achieved both required and aspirational levels, with two years remaining before the 2020 performance measurement date.

ACE Performance vs. Exelon Peer Group Quartiles

SAIFI				CAIDI			
ACE 2017	Quartile	Peer Group		ACE 2017	Quartile	Peer Group	
		2013	2016			2013	2016
0.86	1st	0.85	0.88	76	1st	91	93
	2nd	0.92	1.02		2nd	101	104
	3rd	1.12	1.20		3rd	110	118

ACE did report a high 2016 SAIFI measurement of 1.30, citing numerous unplanned outages during reconfiguration of the Peermont Substation as a material factor explaining that result. ACE has begun adoption of Exelon's High Risk Evolution (HRE) Process to address human error. The process applies a formal approach and methods to identifying high risk activities, especially when relay work is involved.

c. District-Level Reliability Performance

N.J.A.C. Title 14:5-8.5 requires that each ACE operating district meet (subject to BPU-approved adjustment) SAIFI and CAIDI targets, based on its average values for the 2010 – 2014 period, allowing a 1.5 standard deviation. ACE Annual System Performance Reports have reported the periods during which districts exceeded their maximum levels. This condition existed only in 2016. The next tables present district-level SAIFI and CAIDI results.

ACE District-Level Reliability Performance

Cape May District							Glassboro District						
Index	**2013**	**2014**	**2015**	**2016**	**2017**	**Target**	**Index**	**2013**	**2014**	**2015**	**2016**	**2017**	**Target**
SAIFI	0.80	0.63	0.92	1.27	0.87	1.26	SAIFI	2.07	1.71	1.18	1.58	1.15	1.88
CAIDI	78	88	71	89	76	135	CAIDI	106	101	95	115	70	156
SAIDI	63	55	65	113	66	N/A	SAIDI	220	173	113	182	81	N/A
Pleasantville District							**Winslow District**						
Index	**2013**	**2014**	**2015**	**2016**	**2017**	**Target**	**Index**	**2013**	**2014**	**2015**	**2016**	**2017**	**Target**
SAIFI	1.28	0.78	0.87	0.78	0.60	1.88	SAIFI	1.45	1.25	1.18	1.16	1.02	1.79
CAIDI	79	96	73	112	73	99	CAIDI	93	98	88	103	83	116
SAIDI	101	76	64	87	44	N/A	SAIDI	135	122	104	119	85	N/A

[1] Elevated levels attributed primarily to Peermont Project outage

[2] Elevated CAIDI attributed to Cedar Substation bus outage

Geographical characteristics have caused the Glassboro and Winslow Districts to experience higher SAIFI values. The substantially rural character requires long feeders and high vegetation levels. These two districts also have experienced higher rates of vehicle hits and are prone to higher levels of summer and winter storm impacts.

d. Transmission and Substation Reliability

ACE embeds transmission, substation, and distribution system contributions into overall Annual Performance Report presentation of SAIFI, SAIDI, and CAIDI calculations. N.J.A.C. 14:5-8.7 does not require separate reporting. Management does calculate the contribution that transmission, substations, and distribution network elements make to customer interruptions for SAIFI measurement, and to customer minutes of interruptions for CAIDI measurement. The next table summarizes these contributions.

Total ACE SAIFI, SAIDI, and CAIDI measures have substantially improved (fallen) since 2013. The percentages indicated in the following table are percentages of reduced numbers of total CIs and CMIs between 2013 and 2017. However, these data indicate the importance of preventing substation outages, which can cause substantial CIs and CMIs. Since over 10 percent of total CIs and CMIs, on average, are caused by substation-caused outages.

Percentage Contributions to Interruption Numbers and Minutes

Year	Transmission		Substations		Distribution	
	Number	Minutes	Number	Minutes	Number	Minutes
2013	4%	5%	10%	8%	86%	87%
2014	2%	2%	9%	9%	90%	89%
2015	2%	1%	20%	14%	78%	84%
2016	4%	4%	9%	6%	87%	90%
2017	1%	2%	13%	12%	85%	86%

e. Reliability Improvement Plan Programs

We addressed the BPU orders underlying ACE's Reliability Improvement Plan programs earlier. To summarize:

- The May 16, 2011 Order in Docket No. ER09080664 authorized Reliability Improvement programs Priority Feeders Feeder Improvements.
- The February 20, 2013 Order in Docket No. EO12070650 required an increase in the percentage of Worst Performing Feeders to be addressed in each operating district from four to eight percent.
- In 2015, N.J.A.C.14:5-8.8 required identification of eight percent of worst performing feeders in each operating district and actions to improve reliability within a year.
- The merger order (February 11, 2015 Order Approving Stipulation of Settlement in Docket EM14060581) continued Reliability Improvement Programs until to at least the end of 2021.

In assessing efforts to continue Reliability Improvement Plans consistently with BPU Orders and N.J.A.C. regulations, we considered components, employed since or near the first applicable order in 2011:

- Capital Funded
  - Worst Performing Feeders
  - Comprehensive Feeder Program
  - Distribution Automation Using Smart Grid Technology
  - Underground Residential Cable Replacement
  - Substation Improvements
  - Capacity Expansion
- O&M Funded
  - Enhanced Vegetation Management
  - Distribution, Substation, Feeder Inspections
- Funded with Both
  - Multiple Device Operation Remediation

ACE has applied different names to some of these programs over time. We use here the current naming. Management formerly termed the Worst Performing Feeders "Priority Feeders," Comprehensive Feeders "Feeder Improvements," and Distribution Capacity Expansion "Load Growth."

f. Justifying and Prioritizing Program Spend

Reliability has already exceeded levels required two years down the road and it has achieved high (1st quartile) aspirational levels as well. The success achieved underscores already significant, normal needs for the use of appropriate methods for sound estimates of the gains (relative to the costs) expected from reliability improvement programs. Prioritizing its reliability improvement activities according to their reliability "return" for their required spends should comprise a major management focus.

Reliability engineers have access to outage data via daily Outage Management System outage reports for use in identifying, prioritizing, and budgeting feeder and substation projects, considering:

- Historical equipment reliability performance
- Material condition
- Projected benefit a project will provide to reliability performance
- Potential impact and risk of not performing the work.

Reliability engineers assign monetary values for an avoided customer interruption and an avoided customer minute of interruption, beginning with $100 per avoided interruption and $1 per avoided minute. They can apply factors that modify starting values. The base test measures project costs against resulting monetized values of avoided numbers and minutes of interruptions. Management ranks potential projects according to their ratios of monetized benefit value over project costs. The next table provides an example of the calculation inputs. Management uses judgment that may move a project higher in priority than its benefit/cost ratio, for example to emphasize projects that address multiple interruptions to the same customers.

Reliability Project Candidate Evaluation Illustration

Remediation Method	$/Mile	Outages /Mile	Reduction	Customers /Outage	$/Avoided Interruption
Trim 60 trees per Mile	$2,400	0.20	80%	150	$100
Install 3 Lightning Arrestors per Mile	$4,500	0.10	50%	900	$100
Install 3 Squirrel Guards per Mile	$1,500	0.40	75%	50	$100
Replace 1 Span of URD per Mile	$10,000	3.00	100%	33	$100

"Low-hanging fruit" (projects' addressing high failure rates and low remediation) get the highest priority. Over time, as the high reliability improvement results ACE has obtained suggest, one can expect diminishing returns, as falling benefit levels fall and costs per reduced interruption numbers and minutes rise.

An Oracle Project Portfolio Management (OPPM) system supports evaluation and comparison of all proposed capital projects, including those under the Reliability Improvement Plan. Reliability Engineering first considers alternative solutions, then enters the selected candidate's data into the prioritization model, interruption numbers and minutes numbers for the past 12 months, and expected improvements in them assuming execution of the candidate project. The Project

Prioritizing feature of the system calculates project value in mitigating customer interruption numbers and minutes.

g. Worst-Performing Feeders

ACE has been conducting its Worst Performing Feeder program since the 1990s, and began using its current methods for selecting feeders in 2009. The program seeks to identify and address distribution feeders with the poorest performance during the previous year. Feeder reliability spreadsheets list each feeder's reliability history and ranking. The list produces the identification of annual lists of the eight percent worst performing feeders; including at least five from each of the four districts. Reliability engineers analyze work performed on those feeders during the previous three-years, inspection reports, outage magnitudes, and outage cause histories.

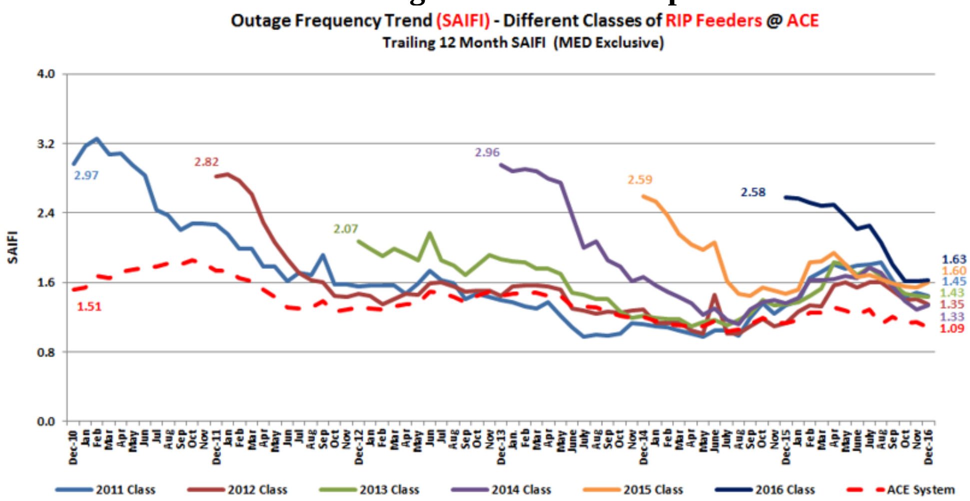
Management has since 2011 focused on feeder first segments, which extend from the substation breaker to the first feeder protective device (usually an automatic circuit recloser). Management considers this approach generally more productive of greater reliability benefits. Remediation efforts past the first segment do occur, however. The next table summarizes remediation since 2013 under the Worst Performing Feeders program. Management addressed more than the required feeders in 2013 and 2014, because the Glassboro District had more worst performing feeders than the other three.

Worst Performing Feeders Remediated

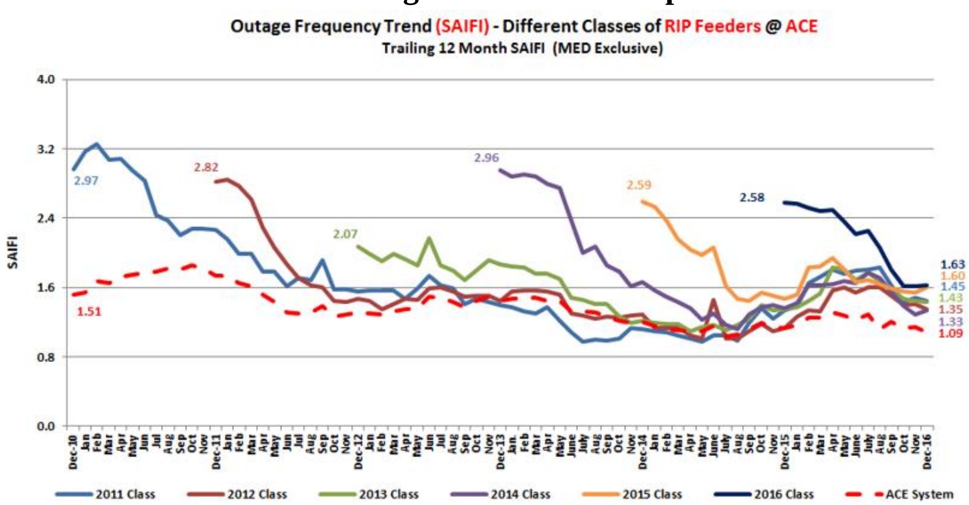
District	Feeder Numbers	Required	Remediated				
			2013	2014	2015	2016	2017
Cape May	54	5	5	5	5	5	5
Glassboro	109	9	12	15	9	9	9
Pleasantville	83	7	8	5	7	7	7
Winslow	54	5	5	5	5	5	5
Total	300	26	30	30	26	26	26

ACE monitors before- and after-remediation performance of feeders addressed by the program, continuing to address a number of them for several years. Eight of the 26 feeders addressed in 2018 were included in prior years. The next tables show improved performance by the population of Worst Performing Feeders over time.

Worst Performing Feeder SAIFI Improvement



Worst Performing Feeder SAIDI Improvement



We inspected mainlines and parts of some laterals on two past worst performing feeders, and parts of other feeders, in each of the four districts. These inspections included at least 200 miles of feeders, over which we observed no concerns about the condition of poles, cross arms, insulators, floating conductors, or other equipment.

h. Comprehensive Feeder Program

The Comprehensive Feeder Program implemented in 2011 supplements activities on the Worst Performing Feeders, seeking improvement on overall reliability measures, with improvement measures similar under both. Management has discretion to determine which feeders to address. Work generally involves the next worst feeders, in each district as ranked on the Feeder Performance List according to outage causes and condition issues. The next table shows by district the number of feeders addressed.

Comprehensive Feeder Projects

Year	Cape May	Winslow	Pleasantville	Glassboro
2013 Feeders	5	7	8	7
2014 Feeders	3	2	4	8
2015 Feeders	0	2	0	8
2016 Feeders	0	3	3	3
2017 Feeders	2	0	2	6

i. Distribution Automation - - Smart Grid Technology

The term “Smart Grid” for ACE refers to the digital technology required to sectionalize automatically and restore service to customers, to provide automatic control of capacitors to improve system efficiencies, and to provide a communication system between the utility and the customers for optimizing customer energy and demand usage. ACE has employed Smart Grid technology to automate fault isolation and restoration, and it exercises automatic control of some capacitors. ACE does not employ Advanced Metering Infrastructure (AMI), but has employed Smart Grid technology since 2009. Its Distribution Automation (DA) program includes Automatic Sectionalizing and Reclosing (ASR) schemes and with standalone automatic circuit reclosers (ACRs) under remote control. ACE also employees Smart Grid technology for automatic capacitor control deployments, substation transformer dissolved gas monitoring deployments, and its direct load control deployments. See the Chapter XVII, *Distribution and Operations Management*, section addressing Planning Smart Grid Technology.

The scope of required distribution automation includes advanced control systems to identify faults and perform switching automatically. It also includes improved Volt-VAR monitoring and control to reduce energy losses and demand and O&M activity. Management began implementation of a Distribution VAR Dispatch (DVD) system for control of capacitors in 2013. The system monitors and controls some distribution feeder capacitors, improving efficiency by reducing reactive current required for motors and air conditioners. Management has implemented such dispatch at with the Glassboro, Lamb, Terrace, and Washington substations, but continues to develop the program before expanding it beyond these four substations.

The BPU has authorized ACE to continue its Distribution Automation program at least through 2021, and has approved $15 million, under the *PowerAhead* program over five years for Distribution Automation implementation. See also Chapter XVII, which addresses smart grid technology, system resilience, reliability management and smart grid activities. We examined how management cost justifies distribution automation projects, and tracks resulting reliability improvements. Factors considered include feeders with three or more lockouts over the past 2-year period, feeders with adequate tie points to other feeders, and more highly loaded 12 kV feeders. Management considers costs when selecting locations, prioritizing feeders with less extensive upgrade requirements.

The two parts of the distribution automation strategy consist of installing automatic circuit reclosers and automatic sectionalizing and restoration schemes.

Automatic circuit reclosers automatically trip in the event of downstream feeder faults, then reclose once or several times to restore the feeder if the fault was temporary (*e.g.*, lightning strike), or to allow downstream devices, to isolate a sustained fault. The more complicated and expensive automatic sectionalizing and restoration scheme automatically isolates a fault, and transfers de-energized load to another feeder section or feeder. A long feeder with large customer counts can require as many as eight reclosers. ACE has 61 feeders that serve more than 2,500 customers and 142 feeders more than 50 miles in length. Management now installs automatic circuit reclosers to sectionalize groups of 500 customers.

ACE has installed 150 in-line feeder ACRs and 103 new feeder-tie ACRs over the past three years. Management plans to include 14 standalone units and 30 -tie units from this group in upcoming ASR schemes. The rest will operate as standalone feeder protection devices. Automatic circuit recloser deployment appears to have improved ACE reliability. Reliability engineers credit the currently installed units for more than 250,000 customer interruptions and more than 19 million customer minutes of interruption in 2017.

Based on an estimated high end cost of $70,000 for a typical installation, ACE has likely spent over $50 million on automatic circuit reclosers. It appears to be on a path to spend that much or more across the next five years. Management's guideline of sectionalizing feeders to produce approximately 500 customers between each recloser calls for installing approximately 400 new in-line reclosers and 450 new feeder-tie reclosers through the end of 2022, many of them continuing to operate as standalone devices.

The Operations Control Center can monitor and control properly equipped automatic circuit reclosers via SCADA; and include them in the second part of the distribution automation strategy - - applying automatic sectionalizing and restoration schemes to large groups of feeders. First responders can more quickly address faults isolated by such schemes. The principal cost sources for creating them involve updating substation SCADA equipment, installing fiber optic communication systems, and increasing the load capacity of some the feeders.

Two feeder groups currently feature automatic sectionalizing and restoration schemes: the 23-feeder Absecon and the 34-feeder Glassboro groups. ACE has expanded the numbers of feeders in both groups substantially in the past several years. The total installation cost through 2017 of $24.6 million amounts to approximately $430,000 per feeder. Reliability engineers credit these two schemes with avoiding over 34,000 customer interruptions and about 2.9 million customer minutes of interruption since they began operation. System Operations management reported that operation of the ASR feeder groups has improved recently, producing total operating times of between two and five minutes.

ACE plans to spend about $37 million on creating new groups and expanding the feeders included in the two existing ones through 2022. Those plans will add 93 feeders to the 57 now included. Management estimates that the planned work will likely avoid some 46,000 customer interruptions and 4.5 million customer minutes of interruption over the next several years, based on extrapolating historical performance data on the feeders to be addressed. Management recognizes eventually diminishing returns on new installations, given other reliability initiatives. Its prioritization of feeders for inclusion has favored those with less costly upgrade requirements, avoiding situations requiring costly substation and feeder capacity upgrades. Management anticipates a change post 2020, shifting focus from installations that will begin to produce less reliability value to other measures, such as replacing high risk substation equipment.

j. Customers Experiencing Multiple Interruptions (CEMI)

Multiple, sustained interruptions (*e.g.*, measured by four or seven multiple operations in a 12-month period) to small customer groups may not substantially affect overall reliability measures, but nevertheless present a significant challenge in ensuring high-quality service. Management has relied on IEEE Standard 1366 for more than five years in employing a target to limit the number of customers experiencing multiple interruptions: no more than 4.5 percent experiencing four or more interruptions and nor more than 0.6 percent experiencing seven or more. Quarterly reviews identify ACE customers who experienced more than three interruptions across the prior 12 months. Management performs an engineering review of the outages and field conditions, and develops corrective actions (*e.g.*, protective device issues, adding feeder ties). The next table shows that performance relative to the two targets has generally improved, but has not been good, except for the most recent full year - - 2017.

Multiple Interruption Performance

Year	CEMI-4		CEMI-7	
	Goal	Actual	Goal	Actual
2011	4.5%	23.48%	0.6%	5.51%
2012	4.5%	38.12%	0.6%	11.84%
2013	4.5%	12.49%	0.6%	1.12%
2014	4.5%	7.03%	0.6%	0.71%
2015	4.5%	19.19%	0.6%	2.98%
2016	4.5%	11.36%	0.6%	2.33%
2017	4.5%	5.53%	0.6%	0.46%

k. Substation Improvements

The BPU has required ACE's Reliability Improvement Plan programs to include substations, where problems (*e.g.*, equipment failures or animal incursions) can affect large numbers of customers. ACE substation improvements projects include adding animal protection, installing substation transformers and associated equipment, upgrading relays, installing new circuit breakers, upgrading switching equipment, expanding buses, adding new feeders, and in some cases replacing or installing new substations. Our field inspections confirmed installation of animal protection and programmable relays, and replacement of oil circuit breakers at substations.

3. Conclusions

6. ACE reporting has complied with BPU Orders and N.J.A.C. requirements.

Reporting under Docket No. ER09080664's May 16, 2011 Order and N.J.A.C. 14:5-8.8 has been timely, and has included the required information. Annual System Performance Reports show an increase from four to eight percent in feeders included in the Priority Feeder Program in each its operating district. Reliability Improvement Program reporting show that ACE has met a SAIFI target of 1.30 and a SAIDI target of 160 in 2015, 2016, and 2017.

ACE has also made the required reporting under Docket No. EO12070650's February 20, 2013 Order and in the Exelon merger docket. ACE has submitted quarterly lists of substation SAIFI and SAIDI and Quarterly Detailed Feeder Outage Reports.

7. ACE has achieved first quartile reliability performance, exceeding the targets forming part of the Exelon merger commitments.

ACE has already reached SAIFI and CAIDI performance levels better than those targeted for 2020. Its performance has gone well beyond levels targeted for 2020, moving into the top quartile of the peer group established for benchmarking performance. Using 2016 IEEE data for the peer group shows an ACE 2017 SAIFI measurement of 0.86 versus the 1st quartile threshold value of 0.88 and a CAIDI measurement of 76 versus the threshold value of 93. Management's focus on and considerable expenditures for reliability improvement give substantial confidence that it will continue to sustain this high level of performance on a sustained basis

8. Management employs effective and reasonably quantified methods for identifying, comparing, and prioritizing candidate reliability improvement plan programs and projects.

Management uses structured processes and quantified measures for determining and comparing estimated costs with estimated benefits measured in reduced numbers and minutes of customer interruptions. Methods focus on delivering the greatest reliability improvements for the lowest cost. These methods employ historical infrastructure condition and performance information robustly, and consider an appropriate range of alternative approaches to improving reliability performance.

9. Management's design and execution of its Worst Performing and its Comprehensive Feeders programs have comported with BPU requirements and reliability expectations underlying them.

ACE has continued to conduct the Worst Performing Feeder program since the BPU's May 16, 2011 Order in Docket No. ER09080664. Management has addressed more than the required numbers and distribution of feeders through actions appropriately designed to improve their reliability performance. Management has supplemented this program with substantial actions to address its broader population of feeders as well. Performance data show improved performance on treated feeders and better performance among currently targeted worst performers - - both substantial measures of success in meeting program goals.

10. The substantial investments made in Distribution Automation demonstrate robust continuation of this element of ACE's Reliability Improvement Plan.

ACE has continued to deploy automatic circuit reclosers to automate distribution system operation in manners that improve reliability by reducing numbers and minutes of customer interruption. Management has employed and plans to continue employing many of these devices on a stand-alone basis. Others form part of existing or planned groups of feeders controlled by automatic sectionalizing and reclosing (ASR) schemes. This application employs Smart Grid technology combining an ASR control program, substation automation equipment, automatic feeder sectionalizing devices and an end-to-end communication system. The schemes provide control to "self-heal" groups of feeders serving customers by automatically isolating faulted segments, and restoring service to customers on a faulted feeder by closing feeder ties with adjacent feeders.

Management plans to continue substantial deployment of automated devices and schemes.

Prioritization of implementation to date has appropriately ranked feeder candidates using numbers of lockouts, recent-year customer interruptions, and the ability to take advantage of communications infrastructure already in place. Management considers cost factors when selecting locations for automatic sectionalizing and restoration schemes, focusing on feeders needing less expensive upgrade requirements.

Management has found distribution automation installation effective in improving reliability, crediting currently installed automatic circuit reclosers and automatic sectionalizing and restoration schemes with avoiding very large numbers and minutes of customer interruptions.

11. The programs management has executed under ACE's Reliability Improvement Plan have had very strong results in improving reliability, but it is not clear that continuing so substantial expenditures under it or under comprehensive equipment replacement plans will continue to produce commensurate value. *(See Recommendation #3)*

ACE, stakeholders, and the BPU have for many years now focused on and emphasized reliability improvement. All deserve substantial credit in bringing to customers top-level performance. Reliability levels targeted for 2020 have already been reached. In fact, ACE has exceeded the threshold defining 1st quartile performance for an accepted peer group. Moving above that threshold means that ACE has attained or reached already a level of performance that only one in five comparison group companies can claim. Management continues to plan very large expenditures for the next five years (see also Chapter IV, addressing capital allocation). The path that management has traveled and the one it charts for coming years give a very strong basis for concluding that high levels of performance will continue (taking account of the potential for major system weather and other massively disruptive events).

Because of ageing substation equipment conditions and planned reduction in RIP programs, the Company plans to increase its spending for substation equipment replacements after 2020. No doubt, it will remain possible to continue identifying programs and projects that will meet a positive benefit/cost ratio, particularly using management's current dollar valuation of numbers and minutes of customer interruptions. However, the comparatively high rates charged by ACE also bear consideration. With performance already at an elite level comparatively, the value of further improving reliability metrics has to be balanced against service affordability. We differentiate improving versus sustaining reliability levels, in order to make clear that we do not question the appropriateness of the "aspirational" 1st quartile goal, which ACE has already attained.

12. Management seeks to identify and respond to instances of multiple sustained interruptions for customers and locations, but its history in meeting goals has not been strong. *(See Recommendation #4)*

The industry generally recognizes that repetition of short-duration outages requires attention even where the data does not "move the needle" on SAIFI or CAIDI measures. Subjecting even small numbers of customers to too frequent, repeated outages does not comport with a holistic definition of high-quality, reliable electricity service.

Stronger performance in 2017 follows a number of years of sustained reliability improvement efforts. Therefore, this single strong performance year overcomes the concerns that poorer performance over a number of past years suggests. Moreover, data on momentary outages can prove an elusive source of problem identification. For example, tree contacts can vary significantly due to variable wind and ice-loading conditions. Nevertheless, close attention to outages of this type should comprise a major focus as part of efforts to determine whether ACE has "turned the corner" in 2017, and can sustain a strong level of performance in limiting repeat outages.

4. Recommendations

3. Recalculate the basis for dollar-valuing reliability improvements and rethink the Reliability Improvement Plan's elements and expenditures. *(See Conclusion #11)*

We view circumstances as warranting a determination of whether "improvement" or "maintenance" now better defines the goal of ACE reliability plans. We do not presume to determine for stakeholders or the BPU what level of reliability ACE customers should receive. However, it cannot be argued that what has been set as an "aspirational" goal - - even for Exelon - - has been reached and is not under apparent threat in the near to intermediate term.

At the same time, as the background to this audit indicates, concern already exists about ACE rates. On top of currently high rates on a comparative basis, the state has adopted aggressive goals for renewable energy and usage displacement. Advanced metering infrastructure, a potentially expensive proposition (but perhaps justifiable nevertheless) adds to the future cost potential mix.

The combination of reliability performance excellence and high costs require a re-examination of how and under what dollar valuations management determines to make reliability improvements. That re-examination should include robust stakeholder dialogue and contribution about levels of reliability versus affordability. Provided that they give an appropriate window five-year and longer plans, rate proceedings, a generic docket, or structured, broadly participative work groups can suffice. Whatever the forum, it should include clear and comprehensive forecasts of costs (capital and operating) and resulting reliability levels, and the ability to gauge (quantitatively as much as possible) the impacts of varying types and levels of expenditures on reliability metrics specifically and how ACE's position among peers would change.

Management has demonstrated an effective ability to measure the reliability impacts of programs and projects that affect it. Those are not in question. What does bear inquiry are the valuations placed on improvements. Should attainment of the "aspirational" level of reliability prove the standard, it seems clear that ACE should be able to reduce Reliability Improvement Plan expenditures. Should desire exist to raise the bar, a basis will be laid for determining what further reliability increases will cost customers, perhaps even on a measure-by-measure basis if desired. Should a consensus arise that an "affordability" frontier has already or will be passed, the process will also relate cost savings to any service level drops identifiable.

4. Closely monitor momentary outage data and proactively address any repeat-outage performance drops from 2017 levels. *(See Conclusion #12)*

With only marginal improvement, sustaining 2017 performance in avoiding repeat-outages will meet management's targets, which we find appropriate. However, the year's great performance variation from a strong historical pattern warrants efforts to ensure that performance then was driven by sustainable factors, not variation in exogenous factors, like weather. Should the relevant outage rates accelerate above 2017 levels (measured monthly), ACE should expand the scope of instances addressed through detailed analysis and action plan development.

E. Asset Management, Inspection, and Maintenance

1. Background

A utility must fully execute well-designed inspection and maintenance programs to ensure that system conditions support safe and reliable operation. Significant or recurring gaps in required activities eventually produce degradation in service. Management should employ a thorough asset management approach, use accurate and comprehensive data, apply clear performance objectives, and adopt appropriate cycles for recurring activities. Deferring inspections and maintenance deprives management of clear and important opportunities to correct defects before they have direct service consequence. Resources need to remain sufficient to perform planned activities at scheduled times.

Chapter XVII addresses our overall examination of asset management, inspection, and maintenance activities This chapter describes our efforts to verify ACE's funding and completion of the inspection and maintenance activities prescribed by its existing programs - - a particular area of operations singled out in the Request for Proposals underlying this audit.

Equipment age bears on deterioration making effective inspection and preventive maintenance programs essential. ACE, like almost all utilities, operates substantially aged electric systems, as the next table illustrates.

ACE Wood Pole Count and Ages

System	Total	Age Known		>40 Years Old	
		Total	Percent	Number	Percent
Distribution	222,597	204,707	92%	105,888	48%
Transmission	7,913	7,314	92%	4,481	57%
Total	230,510	212,021		110,369	

ACE also operates a substantially aged substation transformer population, with 46 percent of the 208 total and 100 percent of the 34 kV transformers 40 or more years old. Cables also likely show great age as well, but management only knows the age of about 12 percent of its cables. ACE's replacement of troublesome oil circuit breakers with vacuum and SF6 gas circuit breakers (under its OCB Replacement program) has reduced the share of circuit breakers more than 40 years old to ten percent.

ACE operates a total of 14 transmission substations and 81 distribution substations. Primary transmission substation voltages are 230 kV, 138 kV, and 69 kV. ACE does maintain one 500 kV substation, but does not own any of the circuits to or from that substation. The next table summarizes ACE line, circuit, and feeder miles and numbers. ACE classifies 138 and 69 kV circuits as transmission, with 34, 23, 12, and 4 kV circuits deemed distribution.

ACE Electric Circuits

Voltage	Overhead Miles	Underground Miles	Circuits & Feeders (#)
238kV			17
138 kV	239	0.5	24
69 kV	656	10	96
34 kV	33	33	7
23 kV	15	77	31
12 kV	7,300	60	297
12 kV URD[1]	N/A	2,780	
4 kV	44	4	9

The Atlantic City area comprises the location of the majority of ACE's $\leq$23kV underground cable system, including 23kV cables serving network feeders and sub-transmission to Brigantine. ACE's extensive underground distribution (URD) cable system consists of lateral feeders generally serving customers in housing developments. Five low-voltage networks served Atlantic City, employing 47 network protectors and transformers.

2. *Findings*

a. Asset Management Approach and Strategy

Management describes its asset management goal and approach in a typical fashion: *"to construct, maintain, and repair electric transmission, distribution and substation equipment using sound engineering principles and quality practices that support maximizing equipment and system reliability and resiliency in a cost effective and safe manner."* ACE meets this goal by continual investment in maintaining system reliability by upgrading distribution infrastructure to avoid equipment failures and by replacement of infrastructure that is aging, or has the reached the end of its useful life. The Company also meets its Asset Management goal by providing new investments to accommodate new customers and new load on the system and by providing reliability investments to continually improve service performance levels for all utility customers on the distribution system.

N.J.A.C. Title 14:5-8.6, Inspection and *Maintenance* Programs, requires that:
ACE shall have inspection and maintenance programs for its distribution facilities, as appropriate to furnish safe, proper, and adequate service. These programs shall be based on factors, such as applicable industry codes, national electric industry practices, manufacturer's recommendation,

[1] URD Is Underground Residential Distribution

sound engineering judgment, and past experience; be focused in significant part on mitigating those interruption causes with the greatest impact on reliability, such as those related to equipment, vegetation, and animals; and utilize tree trimming, physical plant inspection, maintenance and protective measures and equipment to assist in prevention and management of interruption when appropriate. ACE shall submit to the Board, in the Annual System Performance Report, compliance plans for the inspections, maintenance, and recordkeeping required in this subchapter, including those related to vegetation management as required under N.J.A.C.14:5-8.8(c)9. These compliance plans shall include individual programs aimed at reducing specific outage causes. ACE shall maintain records of inspection and maintenance activities and these records shall be made available to Board Staff, who shall be permitted to inspect such records at any reasonable time.

Management has applied the industry-accepted Reliability-Centered-Maintenance (RCM) process. This process seeks to ensure that equipment and systems will continue to perform as required in the operating context that guides their use. The process seeks to identify optimum safe minimum levels of maintenance, cost effectiveness, reliability, availability, and levels of risk involved in managing assets. Applicable processes include analysis for each asset type and use its designed functions, causes of critical failure modes, consequences of allowing assets to run to failure, and the costs of supplemental maintenance, repair, or replacement versus effectiveness of the activities to prevent asset failure.

Management uses these processes to develop what it determines to be optimum maintenance strategies based on an equipment importance and failure consequences, aided by the RCM Simplified Task Selection Logic process developed by the Electric Power Research Institute (EPRI), and based upon knowledge of the system, maintenance history, vendor information, and other outside sources, such as Institute of Electrical and Electronics Engineers (IEEE)[2] standards. Management develops for its equipment classes and uses structured, cyclical maintenance actions required generally to support continued, reliable operation, to identify when more intense maintenance is required, and to determine when assets should be upgraded or replaced. A strength of the reliability-centered-maintenance process lies in its avoidance of otherwise excessive, expensive, and intrusive time-based maintenance.

We discuss and evaluate in the sections below the fixed-interval (although adjustable, when justified) inspections and the preventive and preventive maintenance activities undertaken to promote proper operation of each type of distribution asset. We found that management has appropriately considered and applied accepted utility practices, manufacturer's recommendations, and the experience and knowledge of company's (including Exelon) equipment specialists. These activities are the minimum required to allow equipment already in adequate condition to continue to operate reliably.

Ages of equipment like poles, transformers, and circuit breakers do not necessarily indicate when they will fail, but experience shows that older equipment requires robust condition assessment to determine maintenance required or retirement, its management cannot extend its life efficiently.

[2] IEEE is the Institute of Electrical and Electronics Engineers

Effective asset management requires a structured "Life Cycle" component to guide decisions about how equipment condition should affect maintenance continuation or intensification, reinforcement or enhancement, or replacement. We discuss below processes and programs (*e.g.*, substation Equipment Assessment Analysis, 69 kV circuit rebuilds program, wood-pole treatment and replacement) used to provide a life-cycle approach to evaluating the ACE system. These activities focus on evaluating asset conditions and programmatically determining effective life ends.

b. Equipment Condition Assessments

ACE network assets have undergone an Equipment Condition Assessment process since 2009. A PHISCo Manager of Reliability Programs, reporting to the Director of Transmission and Substations, administers the process. An engineering supervisor and two general engineers cover the ACE Region, working closely with the Electric Maintenance, System Operations, and Substation Engineering to review test data, assess overall health, and decide best courses of repair/replace actions. Those engaged in the assessment process regularly meet quarterly and at other times as necessary. The group reviews maintenance activities, evaluate existing and proposed capital projects (including replacements). The assessment process primarily applies to substation assets but can include other than major equipment.

Data from inspections, tests, and maintenance undergo modeling that produces lists of at-risk assets by equipment type, condition, and priority. The lists result from multi-criterion, weighted modeling that produces "Health Assessments" for each item and proposed, condition-based remedies, which may include more inspection, testing, maintenance, or replacement. The group assigns threatened assets priorities (Immediate, High, and Medium), each of which has a corresponding remediation time window. A Low priority category also exists, generally signifying the need for monitoring rather than physical action. Funding amounts and timing consider priorities to levelized costs in a manner that recognizes risks associated with the rankings given.

Quarterly meetings monitor completion of scheduled work and replacements and they revise asset health priority lists based on the effects of most recent data (*e.g.*, inspection results) on asset health assessments.

Individual substation transformers comprise the most expensive network assets. The group maintains a Power Transformer Health Index. It includes weighted scores in 14 categories, related to risk of failure and criticality to operations. The health scorecard comprises a major source for identifying and prioritizing actions to address at-risk ("unhealthy") transformer equipment. The next table summarizes the 14 categories.

Power Transformer Health Index Weighting Factors

Manufacturer (2.5%)	Main tank oil condition (10%)	Maintenance History (2.5%)
Age (5%)	LTC Oil Condition (5%)	Overloading (5%)
Electrical tests (20%)	Main tank oil leaks (10%)	Through faults (5%)
Bushings (10%)	LTC oil leaks (2.5%)	Affected Customers ($\leq$10)
Dissolved gas in Oil (20%)	Surface rust (2.5%)	

c. Prioritizing Corrective Maintenance Items

Execution of its various equipment inspection processes underlies management's prioritization of repair work, using the same method for all system equipment types. Severity of the abnormal condition and public safety concerns drive the assignment of priorities:

- Priority 10: immediate repair required; issues called in to the Operations Control Center; follow-up report emailed to the appropriate engineering organization
- Priority 20: Repair within 14 days, not to exceed 1 month
- Priority 30: Repair within 9 months, not to exceed 1 year
- Priority 40: Repair within 2 years or next inspection cycle.

d. 69kV System

A substantially aged 69 kV, wood-pole electric system comprises much of the transmission network serving the ACE distribution system. Nearly all of the higher-voltage (138 kV and 230 kV) circuits use more reliable steel structures, ACE has since 2014 complemented its transmission inspection programs with a formal approach to risk-ranking transmission lines based on multiple assessment criteria and focusing on system resiliency and reliability. This approach seeks a long-term view of asset replacement strategies for transmission circuits, supporting decisions about repairs, in-kind replacement, rehabilitation, and partial or complete rebuilds.

Modeling helps drive identification of circuits warranting more detailed consideration, supports scenario analysis, allows comparison of circuits against each other, and (as of 2017) permits management to perform risk ranking. These rankings result from combining and weighting entries for each established criterion. Management regularly updates data (*e.g.*, with the latest annual inspection condition information). Circuits ranked highly are compared with the current long-range plan to ensure that it remains reflective of currently-derived rankings, rescoring each transmission circuit in the fourth quarter year.

Type	Expenses
Annual Fly-By	$365,000
Annual Infrared	$50,000
5-year Aerial	$400,000

The annual 69kV inspection cycle includes fly-by visual and infrared (for overheated connections or devices) inspections. These inspections identify issues including equipment condition, bird nests, and right of way intrusions. More comprehensive aerial inspections including high-resolution structure photography occurs on a five-year cycle (four years for circuits shared with neighboring utilities). ACE also conducts twice-per year comprehensive aerial inspections on circuits with a poor performance history. We examined the inspection counts, finding that ACE did conduct the required five-year comprehensive inspections of all 69kV circuits, with some inspected more than once. The ACE system also employs a "69 kV Transmission Life Cycle Program." It uses Risk Assessment Model to identify and prioritize applying funds to upgrade its aging 69 kV system.

Management reported no past due corrective maintenance items for 2016, but reporting then did not include the lowest priority category. Expansion of reporting in 2017 to include the lowest priority category continued to show no past due items. To prevent open items from becoming past due, management has designed and executed work packages to reduce the numbers of open items in the two lowest categories. A consulting firm retained in Spring 2018 tracks and manages item completion and contracted resources have been retained to address transmission corrective maintenance items in the fall of this year.

Actual expenditures associated with the wood pole ground line inspection program for 69 kV lines were approximately $3,200,000 in 2016 and 2017. Actual expenditures on work generated from comprehensive visual inspections, aerial flyby inspections, and infrared inspections for 69 kV lines were approximately $2,100,000 in 2016 and 2017. Budgeted expenditures for corrective maintenance work resulting from ACE's inspection programs is approximately $19,800,000 over the next five years.

Rebuilds of 69 kV lines have comprised a significant source of costs for some time. Projects initiated before the change to a risk-assessment model in 2014 produced costs of about $9,900,000 in 2016 and 2017, with a budgeted additional spend of approximate $37,700,000 over the next five years. Projects identified since then have added $6,000,000 in 2016 and 2017. Management plans expenditures on such rebuilds of $134 million over the next five years. After the ongoing 69 kV wood pole initiatives are completed, the Company will be using operating data to evaluate the results of the projects.

e. Distribution Feeders

Management now conducts two overhead feeder programs - - the 2-year Circuit Patrol program and the 10-year Comprehensive Inspection program. Management has not been inspecting the 34 kV system nearing its retirement. ACE had only one recurring, formal overhead feeder inspection program in 2013 - - walking inspections on a 10-year cycle. No inspections occurred in 2014, during reorganization of the feeder inspection program. A 2013 summer-readiness pilot program and experience at the other PHI utilities lead to 2015 implementation of a Circuit Patrol inspection program incorporating complete feeder mainline and lateral inspections on a two-year cycle. ACE also conducts walking feeder inspections on an ad hoc basis to investigate feeder outages.

The next table summarizes inspections performed under the two-year Circuit Patrol inspection program.

Circuit Patrol Inspections Completed

<table>
<tr><th>Year</th><th>Voltage</th><th># of Feeders</th><th>% of Planned</th><th>$ of Capital</th></tr>
<tr><td>2013</td><td colspan="2" rowspan="2">Not Available</td><td>100%</td><td>$238,096</td></tr>
<tr><td>2014</td><td>None</td><td>$4,369</td></tr>
<tr><td rowspan="2">2015</td><td>4 kV</td><td>10</td><td rowspan="2">100%</td><td rowspan="2">$62,927</td></tr>
<tr><td>12 kV</td><td>132</td></tr>
<tr><td rowspan="2">2016</td><td>4 kV</td><td>6</td><td rowspan="2">100%</td><td rowspan="2">$69,693</td></tr>
<tr><td>12 kV</td><td>139</td></tr>
<tr><td rowspan="2">2017</td><td>4 kV</td><td>10</td><td rowspan="2">100%</td><td rowspan="2">$531,198</td></tr>
<tr><td>12 kV</td><td>133</td></tr>
</table>

Management's reported $4,369 in expenditures for 2014 covered conversion of inspection data from a spreadsheet to a database format. The 2015 and 2016 spends went to the 2-year Circuit

Patrol inspection program implemented in 2015. The 2017 spend includes both the Circuit Patrol inspections and the 10-year Comprehensive feeder inspections. ACE performs annual visual or operational inspections on automatic circuit reclosers in non-coastal areas on a four-year cycle in non-coastal areas, and annual operational inspections in coastal areas. Management completed inspections in accord with these cycles between 2013 and 2017. ACE planned and completed annual inspections of coastal-area capacitors, and inspections in non-coastal areas on a two-year cycle.

Year	Dollars
2013	$9,225,409
2014	$10,188,972
2015	$11,659,486
2016	$10,971,108
2017	$13,828,621

As noted, inspections like those described above identify corrective actions. Spending on distributing feeder corrective maintenance has increased since 2013, as the accompanying table demonstrates. Implementation in 2015 of the 2-year inspection program served as a principal driver of the increase. PHI adopted and applies at ACE a number of Exelon practices following the merger. They include more comprehensive increased tracking of corrective maintenance work, the revised priority system discussed earlier, and a "Fix It Now" team assigned in each ACE district and focusing on timely addressing maintenance items. ACE tracks items completed and backlogged monthly.

The next table summarizing backlogged items by priority shows completion of the highest priority category, substantial completion of the next highest category, and mixed results for the two lower categories. Priority 30 (completion in 12 months) backlog virtually doubled from the end of 2016 to the end of 2017. Management bundled Priority 30 corrective maintenance items with other nearby and similar work to promote efficient reduction of the backlogs.

Overhead Corrective Maintenance Backlogs

Priority	Repair Time	2016		2017	
		Completed	Backlogged	Completed	Backlogged
Priority 10	ASAP	137	0	642	0
Priority 20	4 weeks	150	15	352	5
Priority 30	12 months	3,339	615	3,106	1,191
Priority 40	2 years	559	450	298	63
Total		5,578	1,080	4,398	1,259

ACE began in 2014 to inspect its pad-mounted transformers (now numbering 31,863) on a five-year cycle. It has just completed its first cycle successfully, and plans to inspect in 2019 those required to complete work required in the first year of the next cycle. Pad-mounted transformers pose safety and hazards and reliability threats. Their door locks might be removed, rust might allow exposure, and the transformers might sink and damage conduits. ACE implemented a formal pad mount transformer inspection program in 2014, using a five-year cycle. Inspections include labels, locks, clearances, oil leaks, contact voltage (to assure that no electrical shock hazard exists), exterior condition. Inspectors also perform infrared (for hot connections), and digitally report locations, data, and findings using mobile electronic data collecting device. Annual expenditures for the first cycle ranged between $106 and $146 thousand.

ACE serves a 3-by-16 block area of downtown Atlantic City with a low voltage (120/240 volts) network. Five 23 kV underground feeders serve this network's 47 underground network protectors and transformers. ACE's underground ground group tests these facilities on a five-year cycle.

f. Wood Pole Inspection, Reinforcement, and Replacement

We described earlier the large number of ACE wood transmission and distribution poles exceed 40 years of age. Management conducts ground-line pole inspections of poles more than 14-years old on a 10-year cycle. Inspections include excavation to the frost-line, chemical treatment of the base, boring, "shell thickness" measurements on poles with internal voids caused by decay and insects, and chemical injections into the voids to prevent further decay. If shell thickness measurements indicate failure to meet specified strength, they are reported for reinforcement or replacement. Inspections addressed 43 percent of owned wood poles in the five years from 2013 through 2017 at a total cost of about $4.2 million. Plans call for inspecting the remainder by cycle end. Between 2013 and 2017, ACE reinforced 1,323 wood poles and replaced, or scheduled for replacement, 1545 wood poles.

Management has been prioritizing reinforcement and replacement under a structured approach, which it intends soon to change to the same categorization used for prioritizing corrective maintenance on other equipment types. Our examination of reported data showed no backlogs of identified reinforcements between 2013 and 2017. We did observe recorded backlogs in planned replacements. Management reported that it believes those recorded as backlogged actually have been replaced. Some may have formed part of abandoned facilities and in some likely simply did not have installation dates entered in the geospatial information system. We also found a substantial number (173) priority replacements past due mid-year in 2018. Management has a "work down curve" scheduling replacement of them before the end of the year. The following table shows substantial and growing pole reinforcement and replacement expenditures since 2013.

Reinforcement/Replacement Costs

Year	Dollars
2013	$1,686,171
2014	$1,801,775
2015	$4,630,609
2016	$2,015,908
2017	$3,255,533

Our field inspections allowed us to observe in-process pole replacements at two separate locations. We observed many cases of newer poles interspersed with older ones, finding the latter in good condition as well. These observations confirmed a properly nuanced, condition driven replacement process. We also learned that ACE has been installing extra-strength Class 2 poles and 69 kV insulators with extra surface length to reduce flashovers caused by salty air.

g. Underground Residential Distribution

Year	Failures	Expenditures
2013	114	$1,837,351
2014		$278,908
2015	165	$890,372
2016	115	$1,179,226
2017	138	$1,216,688

ACE installed much of its underground residential cable plant many decades ago. With much of the equipment in late stages of service life, ACE has experienced more than 100 yearly outages involving such cable and it has spent on average some $1 million. Aging cable of this type generally fails more than once, once trouble begins. Management examines the replacement option using customer impact and system needs as primary factors. Management's goal is to limit the time that an underground loop remains open during repair/replacement to 28 days. Our review of 2017's 138 cable failures showed 39 instances of failure to repair or replace within 30 days, 15 within 60 days, and 10 within 90 days.

h. Substations and Circuit Breakers

ACE operates many aged substation transformers. About 46 percent of its 208 substation transformers, including 100 percent of its 34 kV transformers, exceed 40 years in age. If a 34 kV substation transformer unexpectedly fails, the lead time to replace that transformer could be considerable because ACE has no on-hand supply of spare 34 kV transformers. ACE, however, is gradually retiring its 34 kV system.

Abnormal conditions can develop quickly in substations, from oil leaks; nitrogen leaks in transformers with gas blankets, vandalism or theft, SF_6 breaker leaks, and battery cell or charger failures. Workers also need to read meters or record and reset relay targets. The next table summarizes substation equipment inspection and preventive maintenance activities and cycles.

Substation Equipment Inspection and Preventive Maintenance

Activity	Cycle	Activity
Visual	Multiple	Overview equipment inspections (5-week) and detailed spring/fall
Infrared	Annual	Infrared camera detection of overheated contacts and bus connections
Transformer, Load Tap Changers	Annual	Oil tests oil for condition, water, dissolved gas; intensified for abnormal results; dissolved gas in oil monitors on critical transformers
	6-12 Years	Battery of preventive maintenance, predictive tests; greater frequency for some older types
Air- Magnetic Breakers	8 Years	Battery of preventive maintenance and predictive tests
Oil Circuit Breakers	1 to 6 Years	Sample/ test oil condition
Oil Breakers	5-8 Years	Battery of internal tests; intensified for abnormal results
SF_6 Gas Breakers	8 Years	Battery of preventive maintenance and predictive tests
Vacuum Breakers	8 Years	Battery of preventive maintenance and predictive tests
Battery Bank and Charger	Annual	Battery of internal tests; intensified for abnormal results
Emergency & Black Start Generators	Multiple	Annual inspections and generator test runs twice per year.
Protective & Reclosing Relays	4-8 Years	Relay calibration and operations tests, dependent on system voltage; trip circuit operational tests when checking relay calibrations and operations
Under- Frequency Relay	4-8 Years	Electromechanical - - 4-years; microprocessor - - 8 years
Power Line Equipment	12-18 Months	Operation tests
RTUs, SCADA, Metering, DFRs	Multiple	Maintenance and operation tests as operational issues determine

Electric Maintenance (substation) electricians visually inspects substations for abnormal conditions, to record certain readings, and to replace burned out indicator bulbs. The five-week cycle for this work recently changed from a quarterly one. Management also added in 2017 a second annual infrared (thermal) examinations. A contracted company performs these examinations before summer peak loads, to identify abnormal temperatures on bus connections and switches, circuit breakers, and transformers. These scans identified 33 overheated connections in 2016, 51 during the summer of 2017, and 27 in the winter of 2017

Management has performed all inspection activities required by its established cycles since 2013, with annual costs running somewhat less than $1 million. The infrared inspections have also occurred at planned rates. The Company also completed its substation infrared examinations each year as scheduled. Management replaced paper inspection forms with electronic versions in 2017.

Management prioritizes substation corrective maintenance items using the same four-level structure applicable to other equipment types. The following table shows a substantial increase over time in percentages of substation corrective maintenance items completed on time. The total percentages completed on time increased from 49 percent in 2013 to 95 percent in 2017.

Substation Repair Completion Rates

Year	2013	2014	2015	2016	2017	Year	2013	2014	2015	2016	2017
P10 – ASAP						**P30 – 1 Year**					
Total	46	59	22	3	13	Total	217	347	346	655	599
On-Time	85%	73%	50%	67%	85%	On-Time	27%	73%	85%	90%	96%
P20 – 30 days						**P40 – 2 Years**					
Total	297	320	272	38	280	Total	7	1	102	182	246
On-Time	60%	73%	66%	95%	97%	On-Time	0%	0%	68%	86%	89%

Management did succeed in eliminating the 2017 backlog by the end of the year. That backlog for 2016 was 116 items. The institution of formal tracking and processes and the 2017 addition of centrally-located, substation two-person "Fix-It-Now" substation teams (focusing principally on the two highest maintenance priority categories) has driven improvement in on-time completions and elimination of year-end backlogs. Each district has four such teams, two each for substation and protective relay work. The next table summarizes expenditures on substation inspection and maintenance activities.

Substation Inspection and Corrective Maintenance Costs

Activity	2013	2014	2015	2016	2017
Inspections	$764,983	$961,371	$862,405	$853,673	$1,177,054
Infrared	$18,389	$19,268	$18,675	$19,314	$39,402
Maintenance	$2,401,857	$3,298,433	$4,687,148	$6,306,014	$5,479,901

In addition to inspection- and observation-driven corrective maintenance, management performs regular non-invasive inspection and condition tests on substation transformers and circuit breakers, under cycles that range from 5 to 12 years. Substation fixed-interval preventive maintenance includes inspecting for signs of deterioration, and cleaning, lubricating, adjusting moving parts, and repairing defects. Management also performs a number of time-based predictive tests of substation equipment to identify unseen deterioration, such as hot connections, acid and water in insulating oil, abnormal combustible gases in transformers, and wet or electrically poor winding and bushing insulation. The next tables summarize costs for this preventive maintenance work.

Substation Transformer and Circuit Breaker Preventive Maintenance

Year	Planned	Completed	Rate	Costs
Transformers				
2013	36	29	81%	$210,064
2014	26	21	81%	$171,471
2015	44	40	91%	$301,929
2016	34	32	94%	$100,441
2017	19	18	95%	$139,982
Circuit Breakers				
2013	122	99	81%	$290,122
2014	117	108	92%	$443,730
2015	129	122	95%	$739,194
2016	112	110	98%	$636,474
2017	109	100	92%	$453,337

It is not uncommon to defer some preventive maintenance activities to coordinate them with outage schedules. Overall, however, delays should be kept at low levels. We reviewed the number of substation preventive maintenance activities deferred past 12 months - - an acceptable measure for evaluating completion effectiveness. Management has eliminated deferrals of this length following the merger. Similarly, it has reduced even six-month deferrals to a minimum.

Management has replaced a significant number of distribution substation transformers since 2013. Decisions to replace versus repair followed the Equipment Condition Assessment (ECA) process described above. instituted in 2009. Each asset has a "Asset Condition Score," maintained on a "Asset Health" spreadsheet. The group determines and prioritizes follow-up activities for each "unhealthy" asset, considering risk and consequences in comparison to remediation costs (*e.g.*, from corrective maintenance, more intensive or frequent testing, supplemental maintenance, replacement). Engineering, operations, and planning personnel participate in reviews of these assessments at least quarterly, for example, to consider emergent issues such has alarming transformer dissolved gas test results.

The next table shows substation transformer replacement costs of $22.7 million from 2013 through 2017, for the 20 replaced using the Equipment Condition Assessment process (an average of about $11 million). The spending amounts include other work performed in connection with transformer replacement, because project costs do not isolate the replacement portion. Management plans another five replacements in coming years (Tansboro, Mickelton, Ontario, Fairton, and Glassboro).

Distribution Transformer Replacement Costs

Year	Costs	Year	Costs
2013	$8,947,186	2016	$5,178,759
2014	$4,559,447	2017	$1,817,872
2015	$2,200,614	Total	$22,703,878

Oil circuit breakers (OCBs) have enjoyed wide-spread industry use for many decades. These reliable, but high maintenance units are giving way to more functional, reliable, more modern vacuum and SF_6 gas circuit breakers. Good utility practice, reinforced by environmental stewardship, requires rigorous examination of replacing these old-school devices where effective and economical. ACE's OCB Replacement Program has produced replacement of 105 of them since 2013. The accompanying table shows that costs have been substantial. These replacements have reduced to 10 percent the share of breaker population greater than 40 years old. The Maintenance Strategy group identifies and prioritizes removal candidates, using SF_6 gas circuit breakers above 38kV and vacuum breakers below this level. Electrical test results, dissolved gas-in-oil analysis, physical condition, system criticality, legacy breaker model, and schedule for the regularly scheduled testing outage drive the prioritization process. Management tracks replacements through its Equipment Condition Assessment Program process. ACE has scheduled its remaining 65 oil circuit breakers for replacement by the end of 2024.

Oil Circuit Breaker Replacements

Year	Number	Cost
2013	8	$2,496,502
2014	20	$4,234,993
2015	16	$2,367,092
2016	7	$1,927,434
2017	22	$1,987,346
Totals	**73**	**$13,013,367**
Average Cost		*$178,265*

We selected eight more than 20-year old substations for inspection. Our on-site examinations generally found satisfactory conditions. We did, however, observe two issues that bear attention:

- The occasional lack of crushed-stone sufficient to provide adequate insulation generally provided in substations - - a personal safety concern
- Low or negative nitrogen pressure readings - - good practice calls for maintaining positive pressure, to ensure that air cannot enter a transformer.

i. Protective Relays

ACE performs preventive maintenance on and operational tests of its relay, control, and breakers on four- to eight-year cycles, depending on voltage class. The next table summarizes performance rates and cots for these activities. Customer equipment and system outages affect activity completion. We found post-merger completion rates sound.

Relay Preventive Maintenance Completion

Year	Total	On-Time	Costs
2013	513	82%	$413,331
2014	372	69%	$467,639
2015	505	94%	$580,943
2016	345	95%	$559,840
2017	315	96%	$701,132

3. Conclusions

13. ACE's asset management approach and strategy reflect sound industry practice and meet N.J.A.C. requirements.

The asset management strategy and approach effectively uses the reliability-centered-maintenance concept. Management uses internal and industry-wide equipment expertise and experience to determine the time-based inspection cycles, preventive maintenance, and predictive testing required to promote reliable operation of its assets. The same approach applies to the identification of deteriorated assets and to the determination of appropriate supplemental preventive or corrective maintenance, testing, or replacement. Management applies an appropriate, formal Equipment Condition Assessment (ECA) process to support decisions about whether to extend an asset's life or replace it.

ACE has applied an effective life cycle approach to assessing maintenance and replacement decisions, adopting and executing effective 69 kV system, wood-pole plant inspection, treatment, and replacement, and substation equipment condition assessment processes.

ACE's Annual System Performance Reports have included the asset-management-related information required by N.J.A.C. Title 14:5-8.6, Inspection and Maintenance Programs.

14. Management has appropriately designed, prioritized, funded, and conducted 69kV inspection and corrective actions.

Inspection completion cycles and completion rates for 69 kV facilities have conformed to plans and to good utility practice. Management has timely completed corrective maintenance items resulting from its line inspections and observations. An effective prioritization system, comprehensive reporting, and the use of outside resources have enabled management to clear past-due by year end. Management has included a list of its inspection and maintenance items, with time cycles, in its Annual System Performance Reports, beginning in 2015, as N.J.A.C. Title 14:5-8.6 requires.

15. Management has funded and completed suitable overhead distribution inspection and corrective maintenance programs and actions in accord with its plans and with good utility practice, enhancing them in the post-merger period.

Management began formally conducting two-year Circuit Patrol feeder inspections in 2015. Its work completed since then matches the resulting annual requirements, addressing the required numbers of feeders each year. It continues to conduct its 10-year Comprehensive feeder inspection program concurrently with its 2-year inspections in 2017 and it completed its Comprehensive feeder inspections for 2017. We found satisfactory performance in completing corrective maintenance work as well. Instituting the two-year Circuit Patrols produced a significant jump in lower priority corrective maintenance items (which require completion in one or two years). We did observe a growth in backlogs for such items, but not in those with higher priority and tighter completion deadlines. High spending levels in 2017 showed attention to eliminating this backlog. This year has also brought greater organizational focus and resources - - measures we consider appropriate to managing the backlog in lower priority work in an economically responsible way.

16. Our field inspections of the overhead distribution system and substations found no indicators of systemic concern about conditions, but management should complete its investigation of two specific substation issues we observed. *(See Recommendation #5)*

We selected and inspected eight feeders (about 200 miles in length), two in each of the four districts. All had, at some time, fallen under the worst performing feeder program. We also inspected other feeders and laterals. We examined the condition of poles, cross arms, insulators, conductors, and other attached equipment. We found no defects, excessive deterioration (recognizing that some facilities are of well-advanced age), or other concerns. Overall, our inspection found the condition of ACE's distribution poles, conductors, cross arms, and attachments in comparatively good condition.

Management reported that it is investigating two issues we observed during our substation inspections: (a) lack of crushed-stone to serve as an insulator generally employed to ensure safety, and (b) low or negative transformer nitrogen pressure readings, which utilities generally maintain at positive levels to prevent air intrusion. Management needs to complete these examinations promptly, and take corrective actions wherever possible and appropriate.

17. Management's substation, transformer, and breaker inspection and maintenance have conformed to its plans and to good utility practice.

Management has met its required rate of substation inspections under appropriate cycles that supplement five-week inspections with spring and fall inspections (including infrared examination) prior to peak load seasons. Management has made timely correction of defects found. The institution of formal tracking and the assignment of the Fix-It-Now (FIN) Electric Maintenance teams to each district following the merger with Exelon has promoted the doubling of on-time work completion and the elimination of year-end backlogs in 2017. We also found regular preventive maintenance at substations performed on a timely basis. Pre-merger practice commonly deferred such work; those deferrals have since essentially been eliminated.

We also found sufficient efforts to prioritize and to replace aging transformers and oil circuit breakers. Management has consistently performed according to its programs, applying condition-based analyses to prioritize replacements. ACE operates about 32,000 pad-mounted transformers, subjecting them to a five-year inspection program, with spends and activity completions conducted as planned and under cycles consistent with good utility practice.

18. Management has inspected and treated wood poles in accord with a soundly designed approach, but should alter its practice of deferring pole replacements. *(See Recommendation #6)*

We found transmission and distribution wood pole ground line inspection and treatment program spends and work completion in conformity with appropriate cycles and plans. Management has funded and conducted inspections and applied treatments consistent with its program design. Management, however, has not regularly met is schedules for replacing poles that it has found unacceptable and not correctible through reinforcement. It may be that some portion of those poles have actually been replaced, but without proper tracking. We saw substantial variation in replacement spending from year-to-year. At mid-year 2018, management listed 173 priority transmission and distribution wood poles as past due for replacement.

19. Management employs an appropriate processes and time windows for repairing or replacing underground distribution (URD) cable, but should correct its failure to perform work timely. *(See Recommendation #7)*

Management's 28-day duration for underground distribution cable repair or replacement reflects good utility practice. Performance data for 2017 show failure to address 28 percent of 138 failed cables. Delays too frequently extended well past the 28-day window - - 39 unaddressed at 30 days, 15 at 60 days, and 10 at 90 days. Such cable, in service for many decades, can be expected to exhibit increasing problems late in its service life, making it the more important to stay on top of what is a common industry reliability challenge.

20. Management has been substantially completing appropriately designed preventive maintenance work on its protective relays.

ACE plans and funds preventive maintenance work appropriately, and includes relay scheme operational tests. Completion of 96 percent of work on time demonstrates effective performance.

4. Recommendation

5. Promptly complete investigations of crushed-stone condition and nitrogen pressure readings at substations. *(See Conclusion #16)*

Good practice calls for sufficient amounts of crushed stone to act as an insulator at substations and for its spreading in a manner that inhibits animal intrusion at fence lines. We did not find these conditions at some of the substation sites we visited.

Excessive air in transformers can create a risk of tank explosion or oxidation causing sludge or insulation deterioration. Possible remedies for the negative pressure readings we observed at some substations include: (a) using dry nitrogen cylinders to pressurize gas-blanketed transformers to 2-4 psi during inspections, verifying on inspection completion that the nitrogen gas blanket is not leaking, replacing plugged +/- 4psi bleed devices (not the 10 psi pressure relief device), ensuring that pressure increase as a transformer heats up is limited to 3 psi, and periodic testing of gas spaces for oxygen greater than 3 percent. Management can also install valves with hose fittings into the tube between the regulator and the transformer to provide a place to add nitrogen gas or to purge the gas space.

Management should complete its investigation promptly, making changes to crush-stone application and maintenance wherever possible (consistent with local requirements), and adopting measures determined to be cost effective for maintaining positive transformer nitrogen pressure.

6. Accelerate the replacement of rejected wood poles and ensure timely, accurate removal tracking. *(See Conclusion #18)*

Management should accelerate replacement to bring it into conformity with its established guidelines. Where tracking and recording of replacements actually made (or rendered unnecessary) indicates lagging performance, efforts should be taken to address reject poles. Management should place particular emphasis on higher-risk poles, designated as "priority reject."

7. Bring underground residential development cable work into closer conformity to management's 28-day repair/replace window. *(See Conclusion #19)*

Work completion rates on underground residential cable repair and replacement in 2017 varied too far from the 28-day window. Underground loops serving housing and business developments permit prompt restoration of interrupted customers when one section fails. Failure of the second section with the first out of service can produce extended outages. The age and performance history of such cable systems, installed now many decades ago, compels an aggressive approach to removing exposures created while a section awaits corrective work. Understandably, factors like weather and the marshalling of boring contractors will sometimes cause delay. Bringing delays past the 28-day window down to 10 percent or less of annual opened loops and limiting maximum duration to 90 days would materially improve performance.

F. Vegetation Management

1. Background

Contacts of trees and branches with overhead lines generally comprise a very common cause of customer interruptions. Vegetation maintenance program design and execution should seek to optimize reliability benefits and costs. Management should execute programs as designed, using resources necessary to maintain required clearances between overhead lines and trees, tree branches, and other vegetation. Because minimizing tree contact on the first feeder segment is critical to maintaining reliability, utilities often conduct enhanced trimming, including removing overhanging branches and removing hazardous dead and diseased trees outside of the right of way that could fall on the lines during storms.

We examined ACE's vegetation management organization, programs, and work performed. We sought to verify compliance with BPU orders and N.J.A.C. requirements, to assess effectiveness in mitigating tree-caused interruptions, to complete program work as designed and planned, and to examine resource adequacy. Our work included field inspections of tree clearances.

2. Findings

a. Orders and Regulations

May 16, 2011 Order in Docket No. ER09080664: The Order requiring ACE to implement Reliability Improvement Plan (RIP) programs addressed increased clearance between overhead wires and trees and work with stakeholders to remove hazard trees. We address below management's inclusion of these elements in its subsequent vegetation management plans and activities.

January 23, 2013 Orders following Hurricane Irene in Docket No. EO11090543: The Order required establishment of a work group to develop a system to be maintained by ACE for tracking vegetation-related distribution outages and vegetation. ACE has established and it maintains a vegetation Outage Data and Process Overview process for tree caused outages of 500 customers or more. ACE also reviewed vegetation-related outage data, analyzed impacts on system reliability, and reported on the results. ACE submitted its analysis of impacts on May 1, 2013.

N.J.A.C. 14:5-8.6. 2015 provisions required ACE to focus inspection and maintenance in significant part on reliability, including vegetation, to submit an Annual System Performance Report including vegetation management plans, to track and report hazard trees, and to use trained professionals to identify and report hazard trees. ACE has listed hazard trees it cannot remove in its Annual System Performance Reports.

N.J.A.C. 14:5-9.3, 4, 5, 8, and 9: These provisions require use of chemical and biological agents compliant with regulations, that the ACE vegetation manager be an arborist, that ACE work with municipalities and property owners; that ACE trim and remove hazard trees on a four-year cycle, that ACE comply with ANSI A300 and other applicable standards and accepted procedures, that ACE inspect and trim trees near its distribution lines to clearances specified in its standards; and that ACE shall remove all overhanging vegetation from the feeder lock out zone.[3]

As we describe below, ACE has complied with these requirements.

N.J.A.C. 14:5-9.9: ACE must properly train clearance personnel, document vegetation management activities and details, summarize in Annual System Performance Report feeders and municipalities involved in vegetation work and hazard trees unable to be addressed, and specify numbers of lines inspected and trimmed. ACE has addressed these requirements in its Annual System Performance Reports.

b. Organization and Responsibilities

ACE personnel provide overall direction and supervision of vegetation management activities, using one outside firm for planning, scheduling, and control of work, and two other outside firms for field supervision and conduct of vegetation work on the system. The ACE organization consists of four persons, all certified arborists: a manager, a supervisor, a program manager for the East area, and one for the West area. ACE employs the industry-common practice of contracting with a leading tree-expert company to field-manage and perform distribution-system trimming. The firm uses about 70 crews (some 180 full time people) trained in tree trimming, vegetation spraying, and hazard tree removal. A separate tree-expert firm does the same for transmission-system work. A third, established tree-service company provides five ASI-certified arborists who: (a) plan system inspections to assess trimming needs, (b) identify hazard trees and enter them into the geospatial information system, (c) perform work planning and scheduling, and (d) verify work

[3] A feeder lockout zone is the segment from the substation to the first protective device or, if there is no device, to an ACE designated location. Mature trees may be exempt from the lock out zone requirement, with the approval of the vegetation manager.

completion in accord with company and state requirements, and (e) conduct quality control inspections of contractor vegetation management activities.

An Integrated Vegetation Management process sets objectives, and evaluates sites, including contribution from stakeholders. The program managers oversee development and execution of annual work plans for their areas. The planning contractor drafts plans for their review for accuracy, completeness, and adherence to specifications. Historical vegetation-based reliability statistics form an important driver of plans. After iteration necessary to satisfy the program managers, final plans go to the field contractors for execution. The requirements of N.J.A.C. 14:5-9.2 comprise an important part of program manager review.

Weekly conference calls among the ACE personnel, the planning contractor, and the field contractors monitor progress, discuss concerns, and assess resource adequacy for completing work as and when required. Once the program manager is satisfied that the plan will enable ACE to meet or exceed the specifications set forth, the plan is released to the tree contractor for execution. The program managers also inspect the vegetation management work during the execution and upon completion by the field contractors. All work undergoes inspection after the field contractor reports it complete. Deficiencies found are documented for return to the contractor for immediate completion, followed by another inspection.

c. Vegetation Management Programs

Trimming occurs on a four-year cycle. The two ACE program managers prepare annual feeder plans. They use historical tree-caused outage data, customer counts, and consider cost efficiency in feeder plan development. The plans undergo evaluation of costs per mile for each feeder, against targeted cost levels. Cases where per-mile costs exceed the target undergo a search for cost reduction means. Separate inspections of conditions on circuits under the Worst Performing Feeder program determine the vegetation management activities each requires. Work with the reliability and engineering groups seeks to ensure that protective device information, priority work and customers, and planned construction work schedules factor into each feeder's vegetation management work plan.

The ACE Vegetation Management organization has used an automated SAP platform to schedule and track vegetation management work, with plans to transition to Exelon's Asset Suite 8 system by late 2018. Management provides the contractors with digital systems enabling location, device locations, mature trees, and sensitive-customer information:

- GIS (stores and manipulates geographical information)
- GPS(global positioning, satellite navigation for determining ground positions).

ACE also digitally documents and collects vegetation management work scheduling, progress, timesheet, and invoicing data to optimize work management.[4] Management provides advance

[4] SAP Plant Maintenance (PM) is a component of the SAP ERP Central Component (ECC) that helps businesses support and maintain equipment and systems.

knowledge of upcoming trim and hazard-tree work to affected customers and municipalities through bulk mailings, door hangers, and personal contact.

ACE manages vegetation on 23 transmission circuits (including its 69kV facilities), covering 102 miles. Managing vegetation includes inspections, tree clearance, brush control, hazard-tree removals, and trimming on a cyclical basis. Aerial vegetation clearance inspections for each transmission line occur twice each a year - - once with leaves on and then off the trees. Walking vegetation clearance inspections occur on four-year cycles. Aerial and walking inspectors immediately report imminent threats to the Operations Control Center and to Vegetation Management for corrective actions. Management also uses the results to identify, map, and schedule any trimming required on an off-cycle basis. Trimming of every transmission circuit occurs at least once every four years, from ground to sky per regulated clearances. Mechanical removal of weak hazard trees and branches also occurs at this time.

All of ACE's 7,200-mile distribution system undergoes driving or walking inspections every four years by International Society of Arboriculture-certified arborists. Continual monitoring of tree-related SAIFI data occurs as well, generating remediation activities. Separate inspections of Worst Performing Feeders and investigation of contact and fallen-tree issues identified by post storm inspectors also inform planned and special vegetation management measures. ACE's historical practice involved trimming the full length of each distribution primary feeder, including laterals (side taps on main line) to provide 10-feet clearance horizontally from conductors (more than 10 feet when four-year tree growth requires greater clearance). ACE methods called for tree pruning in accordance to ANSI A300 guidelines - - an accepted industry standard.

ACE expanded its practices in 2016, as required by N.J.A.C. 14:5-9.8. This provision states that:
Starting on January 1, 2016, vegetation management practices shall include removal of all overhanging vegetation from the lock out zone (from the substation to the first protective device, generally an automatic circuit recloser) on the distribution circuit. For circuits that do not have protective a device, the EDC's engineering department and VM will designate the area referred to as the lock out zone. Mature trees may be exempt from the above requirements at the reasonable discretion of the EDC's VM as it pertains to the lock out zone.

ACE also addresses hazard trees as required by N.J.A.C. 14:5-9.5 code; which states that:
if the EDC's VM determines that a tree meets the definition of a hazard tree, the EDC shall determine if it is permitted (for example, by easement, tariff, or law) to remove or mitigate the hazard tree. If the EDC determines that it is not permitted to remove or mitigate the hazard tree, the EDC shall attempt to obtain permission to remove or mitigate the hazard tree. If permission is granted or it is determined that permission is not necessary (because of easement, tariff, or law) the EDC shall arrange to remove or mitigate the hazard tree as part of the scheduled vegetation management work to be performed during the current year, unless the VM determines that the condition of the hazard tree poses an imminent risk of failure, in which case, the EDC shall remove or mitigate the hazard tree as soon as possible.

ACE has also implemented a program to remove mechanically off-right-of-way hazard trees and branches that could fall into the overhead lines. Management also began to remove overhanging branches and to trim ground to sky, with at least 15 feet of vertical clearance, on the lockout segment of each feeder. Expanding trimming of the lockout segment, the initial segment from substation to first protective device, reduces customer interruptions because branch contact on the lockout section may cause interruptions for all customers on a feeder, which could be up to 3,000 customers. The accompanying table summarizes removals and cases of denial of permission to do so. ACE can exempt on owner or municipality request the removal of overhanging branches where tree contact risk is low. Management reports cooperation from Regional Shade Tree Commissions in recent years.

Year	Removal	Refusals
2013	2,683	-
2014	593	4
2015	3,890	29
2016	3,937	46
2017	7,187	30

d. Vegetation Management Activity and Costs

We examined vegetation-management work completion relative to cycle requirements. With vegetation management a frequent first-source of savings in the industry, it is important to ensure that management sustains a robust level of activity. It can take a number of years for cuts in vegetation activities to produce drops in reliability measures. When they eventually do, catch-up time, cost, or both needed to halt those drops can prove very substantial. The next table summarizes work completion rates since 2013.

Tree Trimming Completion Rates

Year	Miles		
	Goal	Completed	Variance
2013	1,711.71	1,653.92	57.79 (3.4%)
2014	1,747.39	1,743	4.39 (0.3%)
2015	1,782.40	1,782.40	None
2016	1,902.36	1,902.36	None
2017	1,844	1,844	None

The annual goals comport with a four-year cycle. Performance has essentially met goals. The small 2013 variance resulted from municipality permission issues, preventing completion in that year, with the work made up in 2014. The even smaller 2014 reported deficit occurred due to delays in post-completion inspection, not in the field work itself.

The circuits we inspected reflected effective vegetation management. Our field inspections of eight feeders included an examination of vegetation conditions and intrusions on or near primary phases. We also examined other feeder and lateral sections en route to and from the eight selected feeders. We viewed about 200 miles of feeders - - most scheduled for trimming in 2019. Even three years into the four-year cycle, we found only two locations where trees appeared to be within two feet of energized primary voltage parts.

The next table summarizes vegetation-management budgets and actual expenditures in recent years. Hotspot (off-cycle) corrective maintenance work in coordination with Reliability

Engineering caused the increase shown over 2013 levels in 2014. That work continues to occur and to contribute to annual costs today. Enhanced trimming (*e.g.*, on the first feeder segment) and hazard tree removal begun in 2016 to improve reliability have produced substantial increases in annual costs since 2015.

One way to measure the benefits of annual increases in expenditures beginning in 2016 is to measure changes in tree-caused contributions to SAIFI. One should not rely on a single year of data, particularly given the significant increase in annual costs, but the data do show improvement.

Changes in ACE Tree-Caused SAIFI Measurements

Year	ACE Total	Cape May	Glassboro	Pleasantville	Winslow
2013	0.27	0.04	0.52	0.14	0.37
2014	0.30	0.51	0.51	0.12	0.47
2015	0.17	0.01	0.29	0.09	0.31
2016	0.28	0.08	0.47	0.11	0.50
2017	0.17	0.08	0.31	0.05	0.26

The Glassboro District has the highest tree density and longest feeders (up to 100 miles), and therefore the highest tree-influenced SAIFI measurement. Fully 40 percent of ACE tree work occurs in the Glassboro district. Like SAIFI, tree-caused customer minutes of interruption have also fallen (improved). The next table shows that they dropped from an average of about 16 million in in previous years to 7.6 million in 2017. Tree-caused outage minutes averaged 26 percent of total minutes in the preceding years - - 22 percent in 2017.

Tree-Caused Interruption Minutes

Year	Total	Trees	Tree %
2013	72.2 million	16.4 million	23%
2014	58.6 million	18.7 million	32%
2015	46.0 million	10.1 million	22%
2016	67.6 million	18.3 million	27%
2017	34.6 million	7.6 million	22%

3. Conclusions

21. We found the design and application of the ACE vegetation management program consistent with BPU orders and N.J.A.C.

Requirements changed in the 2013 through 2017 period that we examined. ACE has met the organization, resource, qualifications, reporting, procedural, cycle, technique, clearance, off-cycle, and enhancement requirements and changes to them.

22. ACE vegetation management has operated under an appropriately structured organization, sufficient resources, and sound program design and planning.

The ACE team responsible for managing vegetation consists of arborists. The team oversees qualified outside firms to plan, field manage, perform, inspect, report, and control work. The planning of annual work uses required and appropriate cycles, and it applies benefit/cost analyses in planning. Management uses effective digital tools to schedule and track work.

23. ACE has undertaken work designed and at a pace sufficient to meet established cycles and it employs effective means for identifying and executing off-cycle and immediate-response vegetation work.

ACE has consistently performed work under a design and plans at a pace sufficient to keep pace with annual cycles. Reliability metrics over the preceding five years evidence effective performance. ACE has complied with N.J.A.C. 14:5-9.8 enhanced tree trimming and hazard tree removal requirements, and has conducted off-cycle trimming to mitigate imminent threats to the operation of the electric system. The twice per year fly-by vegetation inspections and the four-year walking inspection and trimming cycles for transmission lines (including 69 kV) reflect good utility practice.

24. Enhanced vegetation-management practices show promising reliability results, but they have had a significant impact on annual costs, and thus bear close monitoring. *(See Recommendation #8)*

Annual vegetation-management costs may be on the order of $10 million or so greater since the inception of enhanced efforts. The four year cycle used for planning work (and other variables, such as weather conditions inducing tree contacts) makes strong reliance on a single-year's performance risky. Nevertheless, 2017 results to point in the direction of SAIFI and interruption-minute performance improvement that we find intriguing. A robust series of other measures, discussed earlier in this chapter, have also been underway for a number of years. As Conclusion # 11 and Recommendation #3 above state, now very strong reliability measurements call for an examination of what measures may continue to have continuing value in excess of their costs. That examination necessarily requires an examination of what levels of reliability should drive decisions, now that ACE has met both targets set for 2020 and 1st quartile performance.

25. We did not find a reason to find public or customer restrictions on vegetation management activities a major constraint.

ACE has for a long time worked with regional shade commissions and others to reduce public restrictions to tree overhang trimming and hazard tree removals, which is good utility practice. Hazard-tree removals have increased dramatically since the 2015 N.J.A.C. regulations (from 2,683 in 2013 to 7,187 in 2017). Management still faces restrictions on access to overhead lines during high-traffic periods, but did not report problems in obtaining local sources of cooperation needed to address vegetation management activities.

4. Recommendations

8. Incorporate enhanced vegetation management activities into analyses and processes covered by Recommendation #3 above. *(See Conclusion #24)*

There is no present, precise way for segregating the reliability effects of the programs and activities at issue in that conclusion and recommendation from those associated with enhanced vegetation management. Therefore, the question of value in continuing to spend what may be an added $10 million per year here needs to be considered as part of the processes adopted to address Recommendation #3.

G. Improving System Resiliency

1. Background

The preceding sections of this chapter (addressing asset management, inspection, maintenance, and repair/replace) bear on a system's reliability, which affects, but is not the same as its resiliency. A system's reliability refers to its ability to deliver electricity in the quantities and with the quality required (measured by indices such as CAIDI and SAIFI). Resilience refers to a systems ability to recover from adverse conditions, such as major storms. ACE's PowerAhead system resiliency subprograms and their conformity with BPU orders form the focus of this part of the chapter.

ACE projects targeted at system resilience include those:

- Designed to eliminate outages on major system components from extreme weather - - like equipment hardening, relocating, and undergrounding
- Designed to recover from outages as effectively and efficiently as possible - - like additional feeder and substation load transfer capability and capacity, and additional devices and automated Smart Grid control schemes that optimize sectionalizing and restoration processes.

We examined conformity of management plans and actions with BPU requirements for improving system resilience, the robustness of its range of enhancing programs, and its application of sound means for relating and then using the value of benefits produced to the costs of resiliency-seeking programs and projects.

2. Findings

a. PowerAhead's Reporting Requirements

ACE included in its 2016 base rate case filing proposed expenditures of $176 million over five years under a "PowerAhead" program designed to improve system resiliency. The BPU authorized $79 million for subprograms intended to improve distribution infrastructure storm resiliency and to reduce restoration times. Projects and programs making up the remainder of ACE's proposal included smart sensors for street lights, a new mutual assistance staging center, a new emergency response center, distributed energy feeder upgrades, or replacing old open secondary wire with triplex wire.

The BPU required ACE to file a baseline analysis detailing the feeder-selection criteria and analyses demonstrating that chosen feeders are incremental to the existing reliability improvement programs and base-rate reliability spending. ACE must also file semi-annual reports identifying, among other things: (a) estimated work completed for each sub-program, (b) forecasted and actual costs by subprogram and cost category, (c) estimated subprogram completion dates, (d) anticipated subprogram changes; (e) major-event-day (MED) customer minutes interrupted and CAIDI performance at the feeder, operating area, system, or device level, compared to severe weather event performances for those feeders for the prior rolling five-year period. ACE submitted its first Semi-Annual PowerAhead Status Report on March 30, 2018.

ACE must also continue to provide Quarterly Outage Reports under the BPU's February 20, 2013 Order in Docket No. EO12070650 detailing blue-sky performance.

b. PowerAhead Genesis and Design

ACE developed its resiliency plans using analyses of causes of poor feeder section performance during past major storm events. Resiliency-improvement practices have focused on reducing feeder faults and asset damage during severe storms, and improving sectionalizing and load transfer capability. These efforts bear a relationship to blue-sky reliability improvement plan programs, but specifically sought interruption minute and CAIDI improvements during storm events.

An ACE 2016 rate case filing proposed the PowerAhead plan as an increment to base and reliability improvement activities, seeking to advance grid modernization, energy efficiency, distributed generation, and storm resiliency. Originally proposed expenditures of $176 million became an authorized level of $79 million following a stipulation among rate case parties. As originally proposed, PowerAhead included 11 subprograms falling into four general categories. The next table shows the categories and their portions of originally proposed and surviving PowerAhead costs.

PowerAhead Subprograms

Subprograms	Proposed	Surviving
Structural and Electrical Hardening	$30	$24
Distribution Automation	$15	$15
New Harbor Beach Substation	$14	$14
Barrier Island Feeder Ties	$13	$13
Selective Undergrounding	$11	$11
Electronic Fusing	$5	$2
New Emergency Response Center	$29	$0
Smart Sensors for Street Lights	$23	$0
Replacing Open Wire Secondary	$20	$0
Distributed Generation Feeder Upgrades	$10	$0
New Mutual Assistance Crew Staging Center	$6	$0
Totals	**$176**	**$79**

The subprograms addressed the following forms of resiliency improvement:

- Surviving
  - Hardening and Resiliency - - to make equipment less susceptible to flooding and storm damage
  - Structural and Electrical Hardening - - to enable 12 selected feeders in areas most vulnerable to storms to better withstand wind, snow, and ice
  - Selective Undergrounding Subprogram - - to underground critical overhead lines sections in customer-density areas with heavy tree cover

  - Barrier Island Feeder Ties Program - -to create alternative feeds from the mainland for low-lying island areas
  - New Harbor Beach and Brigantine Substation Replacement - - to reduce flooding vulnerability
  - Accelerated Distribution Automation Subprogram - - to install automatic reclosers and automatic sectionalizing and restoration schemes
  - Electronic Fusing - - to replace fuses requiring replacement after single operation, to allow restoration after momentary faults
- Not Surviving
  - Open Wire Secondary - - to redesign feeders to eliminate open-wire secondaries in areas with significant storm history
  - Distribution Energy Feeder Upgrades - - to analyze methods for increasing the amounts of solar generation that may be added to feeders
  - Smart Sensors for Street Lights - - to replace streetlights photocells to provide a communication path for smart devices street light status and reporting
  - New Mutual Assistance Staging Center - - to replace temporary staging area with a new, permanent one
  - New Emergency Response Center - - to provide a more accessible, larger center.

c. PowerAhead Program Management

The Project Management Office manages the PowerAhead subprograms, under the Director of Engineering. A project management engineer manages and tracks all subprogram work performed, providing the Director of Engineering with quarterly progress and cost spend reports, detailing problem areas. The Director has responsibility for making any adjustments required to ensure subprogram completion within five years.

3. Conclusions

26. ACE has complied with BPU orders addressing System Resiliency.

Per the May 31, 2017 Order in Docket No. ER16030252, ACE has conducted baseline analysis detailing selection criteria for PowerAhead program feeders, using customer minutes of interruption and CAIDI metrics for major events. The analyses presented provide justifications that selected feeders are incremental to existing reliability improvement programs and base-rate reliability spending. ACE has commenced work on the six PowerAhead subprograms, and submitted on March 30, 2018, the first semi-annual PowerAhead progress report required by the order.

ACE reported work performed, budgeted and actual costs, targeted completion, explanations of variances, covered-feeder interruption-minute and CAIDI measures for the reporting period's only storm (October 24, 2017), and the required five-year comparisons. It remained too soon to gauge the impact of the PowerAhead programs on major event day reliability indices.

27. Management is appropriately monitoring, measuring, and tracking subprogram execution to ensure completion within the five-year period established.

A formal approach and focused project management responsibility exists. There is sufficient reporting of progress and problems to ensure timely completion of the subprograms authorized.

28. The approved subprograms are designed and being executed to produce intended resiliency improvements.

ACE considered a reasonable range of cost-justifiable resiliency-improving measures, and has selected a set that we found supportive of producing such improvement.
We found an appropriate description of strategies and justifications:

- The Feeder Hardening subprogram should increase the strength of feeders most affected by storms, improving their ability to withstand future weather events
- The Feeder Undergrounding subprogram has been designed to eliminate critical-feeder exposure during major storms
- The Barrier Island Feeder Ties subprogram will provide mainland ties supporting faster restorations
- The New Harbor Beach Substation addresses Brigantine Island's distribution system vulnerability to major storms
- The Electronic Fusing and the Acceleration of Distribution Automation subprogram's improved feeder protection, sectionalizing, and restoration using Smart Grid technologies will provide benefits under both major-storm and blue-sky weather conditions

As we have explained earlier, we also found more generally that management has made use of technology (*e.g.*, automatic circuit reclosers, automated sectionalizing and restoration) and it has used other measures (electronic fuses, stronger tree wire, and for its new substations, redundant transformer and breaker designs).

4. Recommendations

We have no recommendations in the area of improving system resiliency, but consider the new mutual assistance staging and emergency response centers as logical candidates to consider, should the BPU or stakeholders find over time that additional measures should be considered. A permanent mutual assistance staging center can reduce preparation efforts. The cited inefficiencies at the existing operations centers do bear on the amount of time required for support, rather than direct restoration activities. Experience gained in the coming years will better inform the BPU and stakeholders on benefits already obtained directly through the surviving resiliency-improvement measures and less directly through reliability improvement plan measures that will have positive resiliency effects.

H. Major Event Preparation and Response

1. Background

Nine reportable major storms affected ACE's territory from 2013 through 2017.[5] N.J.A.C. 14:5-8.8 requires that ACE file Major Event Reports for outages affecting more than 10 percent of customer counts in an operating area. In addition to filing these reports, ACE began in 2015 to

[5] Reportable events are those causing outages to more than10 percent of an operating area.

provide a tabulation of daily stakeholder calls, as required by January 2013 Order EO11090543, in response to Hurricane Irene. The next table summarizes the nine reportable weather and two substation events through 2017 and the three that occurred through the first quarter of 2018. The last column reports the approximate maximum time for most outages.

Major Events between 2013 and March 2018 – Peak Totals of Customer Outages

Event	Peak Outages	Restoration	Event	Peak Outages	Restoration
March 2013 Nor'easter	22,000	2 days	June 2016 Rain/Wind	20,000	1 day
Feb. 2014 Marven Substation	18,700	3 hours	June 2016 Cape May Storm	19,000	2 days
July 2014 Thunderstorm	10,000	1 day	June 2017 Nor'easter	15,000	1.5 days
June 2015 Bow Echo	259,000	7 days	March 2017 Storm Stella	14,000	2 days
Oct. 2015 Hurricane Joaquin	11,000	2.5 days	March 2018 Storm Quinn	24,000	2 days
2016 Jonas Event	45,000	3 days	March 2018 Storm Riley	32,000	4 days
April 2016 Corson Substation	19,000	3 hours	March 2018 Storm Toby	59,000	5 days

We examined how ACE prepares for major weather events, identifies, prioritizes, and conducts restorations, and assesses the effectiveness of its performance after the fact. Effective preparation includes monitoring severe weather risks well ahead of event arrival, as well as a comprehensive, structured approach to assessing likely impacts on the system and customers. Detailed storm checklists should cover all aspects of preparedness and restoration, and be used for monitoring completion of the activities involved. An appropriate organization and resources need to be identified in advance, and prepared for prompt mobilization. Resources and methods for informing and preparing responders, government officials, public information sources, customers, and other stakeholders need to be in place and used as events near.

Communications remain critical as response measures begin and continue to substantial completion. Effective restoration also depends on pre-planned emergency restoration management methods and resources (adjusted as storm impact knowledge advances). Restoration plans and activities must prioritize most critical customers and communicate to customers the best available estimates of restoration plans. Critical customers include hospitals, emergency management agencies, fire and police facilities, sewage and water plants, surgical centers, assisted living and nursing homes, radio and TV stations, and company facilities. ACE provides both planned outage and severe weather notifications and information packages to those enrolled in its Emergency Medical Equipment Notification Program.

Storm preparation and response are very substantially guided by BPU orders containing recommendations resulting from examinations of the Irene, Sandy, and Bow Echo events. Those recommendations are consistent with good utility practice, and we considered management's actions to respond to them in evaluating major event preparation and response effectiveness.

2. *Findings*

a. Consolidation of PHI/ACE and Exelon Emergency Management

Exelon has integrated the pre-merger PHI Emergency Operations Plan with those of its other utilities, seeking to incorporate best practices, provide coordinated methods and practices, and to support the ability to share knowledgeable resources across companies when one faces extreme events. The Exelon Model's Peer Group process (see Chapter IX) provides a forum for continuous improvement and the sharing of experiences, in part through regular quarterly meetings among emergency planning and response subject matter experts from across the Exelon footprint. Completing the alignment of field mobile communications device software in 2019 will enhance the effectiveness of other Exelon-utility workers called in to assist in ACE response activities in the field.

The following list of activities summarizes the kinds of analyses, internal benchmarking, and process changes undertaken since the merger

- Mutual assistance procedure/systems review
- Internal storm scorecard procedure
- Storm kits comparison
- Preparedness website redesign
- Procedures review; job aid/checklists
- Weather monitoring program comparisons
- Business improvement/data analytics
- Executive storm summary procedure
- Mutual assistance on-boarding website
- Role and ICS structure comparison
- Seasonal readiness program
- Weather convergence evaluation

b. BPU Orders

BPU Orders following Hurricane Irene, Hurricane Sandy, and the Bow Echo summer thunderstorm obligated ACE to address a number of event preparation and response recommendations:

- *Irene*: Many recommendations in the January 23, 2013 Order in Docket No. EO11090543 came from the August I, 2012 EPP Report Actions to implement the recommendations address storm preparedness and restoration, the emergency organization, planning, drills, training, pre-event communications, customer service activities and the call center, external and internal communications, activation, mutual assistance, workforce management, damage assessment, estimated restoration times, command and control, cell phone application, logistics, follow up, storm restoration metrics, external analysis, and substation flooding.
- *Sandy*: We reviewed actions to implement the recommendations of the May 29, 2013 Board Order in Docket No. EO12111050). The Order's recommendation address storm-restoration external communications.
- *Bow Echo*: The September 11, 2015 Order in Docket No. EO15080984 made a number of recommendations addressing internal and external communications and global estimated time of restorations. We reviewed actions taken to implement them.

c. Emergency Operations Plan (EOP)

An effective Emergency Operations Plan lies at the heart of planning and response to major events. The plan that guides actions for events affecting ACE provides clear and detailed instructions for storm preparedness and restoration assignments and activities, seeking to:

- Provide an organizational structure centralizing oversight of response activities
- Provide guidelines to resources engaged in emergency activities: the Crisis Management Team (CMT, Incident Support Team (IST), Crisis Information team (CIST), Crisis Information Center (CIC), Regional Incident Management Teams (IMTs), District and Service Center IMTs, and Call Centers;
- Document incident activities;
- Ensure effective, accurate communications with the public, customers, media, regulatory agencies, and federal, state, and local governments
- Guide training, mock drills, and post-event evaluation to improve emergency performance.

The plan provides instruction on means to prepare for and respond to major incidents, focusing on restoration of electric service and providing outage information and estimated restoration times (ERTs) to the public. The plan's major pre-event elements address:

- Assigning preparation and response duties to regular employees
- Conducting procedural training and practice drills
- Monitoring approaching weather on a 24/7 basis;
- Determining the probable impact of major weather
- Predicting likely outage extents and damages from approaching weather
- Alerting personnel with emergency response duties;
- Opening Incident Command Centers
- Preparing line personnel and other human resources;
- Scheduling contractors, other company crews, and mutual assistance crews
- Readying emergency crew staging centers and material
- Obtaining accommodations for crews.

The plan's major response elements include:

- Conducting damage assessments
- Prioritizing restorations to maximize initial restoration rates and critical-customer activities
- Communicating estimated-restoration-time status to customers and municipalities
- Providing personnel to provide wire down protection
- Managing resource deployment

Major post event activities include:

- Completing temporary repairs
- Conducting post-event analysis and capturing lessons-learned
- Reporting restoration data and lessons-learned to the BPU.

d. The Emergency Preparations Organization

A full-time PHI-level Crisis Management Organization has responsibility for emergency preparedness at ACE, acting under the Emergency Operations Plan. An Incident Command Center (storm room) we visited provides a location and facilities from which to manage preparation and response activities. Plans for addressing major storm outage events address emergency operations and restoration, crisis communications, information technology needs and availability, and logistics and staging.

A Manager of Emergency Preparation manages emergency planning for ACE. This manager reports to the Director of Operation Control Center (Operations Control Center). The full-time PHI-level organization under the Manager includes a meteorologist, and emergency preparation specialists. The organization has responsibility for developing Emergency Operations Plan activities and procedures intended to monitor approaching weather, assess potential consequences continually as it nears, estimate likely levels and locations of system damage and outages, address likely incident management activities required, provide activities checklists, and monitor restoration. IMT leads provide command and control during restoration activities.

The meteorologist has degrees in meteorology and disaster science. Two contractors, Storm Geo and WeatherBug, provide weather services. Storm Geo warns of significant weather and Weather Bug provides real-time weather information. The meteorologist also collects weather data from various websites (NOAA, Earth Networks, Find Local Weather, and AccuWeather) and from other utilities. The meteorologist has 24/7/365 access to Storm Geo meteorological consultations and briefings. During the tropical season, the meteorologist monitors the NOAA National Hurricane Center website. The PHI meteorologist e-mails weather summaries once per day or more when weather threatens.

The Manager, Emergency Planning's organization, together with the IMTs, interfaces with customers, outside emergency-management agencies, BPU Staff, and company resources (*e.g.*, in the transmission and distribution organizations) during storm planning and response. The Emergency Planning organization plans and executes emergency training, drills, and table-top exercises, and it conducts post event performance analyses. At least annual drills occur at the ACE and PHI level, and others at each ACE district. The most recent drills took place on October 14, 2015, September 24, 2016, May 24, 2017, and November 28, 2017. Management addressed lessons-learned in enhancing work with state and county Emergency Management Directors, providing better training for employee emergency assignments, and improving communications templates. The IMT Leads, together with the Emergency Planning organization, also decide when and how to activate the Incident Management Teams, handles storm-room logistics, coordinates Exelon and external mutual assistance crews, and have responsibility for crew and material staging areas.

e. Pre-Event Checklists

Checklists identifying all preparation activities required as threatening events approach also form an essential tool for organizing resources, guiding their activities, and monitoring their execution. The Emergency Operations Plan includes a series of checklists to guide and to monitor preparation activities as events near. Based on threat level, these checklists include:

- Day 4 Before
    - Verifying emergency material locations and stock levels
    - Verifying fuel levels for company facility emergency generation

  - Updating emergency restoration information, including internal and external contact lists and phone numbers
  - reviewing and addressing critical equipment currently or planned to be out of service
- Day 3 Before
  - Beginning an activity log;
  - Establishing the incident command structure
  - Initiating 72-hour pending incident list reporting
  - Alerting and updating employees on status, vacation, recall policies
  - Notification of incident response personnel contractors supplying linepersons, equipment, trimming, damage assessment, and customer call answering
  - Establishing contact material vendors
  - Ensuring adequate equipment inventory and vehicles
  - Establishing personnel levels required on standby
  - Establishing contact with state and local emergency management offices
  - Ensuring portable radio, satellite phone, pager supply inventories; install batteries
  - Ensuring portable computer and Mobile Data Terminals inventory
  - Notifying employees of emergency and providing needed refresher training
- Day 2 Before
  - Verifying sufficient communication device supply
  - Verifying mutual assistance crew resources (*e.g.*, maps, wire, fuses, cross arms)
  - Issuing emergency restoration information (*e.g.*, contact lists and phone numbers)
  - Verifying personnel availability, including contractors and retirees
  - Sharing tentative staffing plans with employees, preparing them for extended work
  - Verifying availability of housing and food
  - Verifying availability of additional vehicles
  - Conducting operation tests on facility emergency generation
- Day 1 Before
  - Securing facilities against high winds, flooding, other threats
  - Obtaining any needed corporate purchase card increases
  - Preparing emergency operating center with required equipment and devices
  - Fueling all vehicles, generators, power tools
  - Reviewing final plans for employee staffing and shifts.

f. Pre-Event – Staging, Materials, and Accommodations

The preceding checklist summary shows the breadth of required pre-event preparation activities. A PHI Incident Logistics Team provides logistical support for major storm events, monitoring emergency material stock and usage, processing requests for materials, acquiring additional materials on an expedited basis, and ensures material delivery, including storm boxes and kits, to staging area sites. This team also manages facilities and staging areas activated for storm response. It provides emergency transportation, and makes fuel, accommodations, and food available. Staging area activation occurs before storm events arrive.

The Atlantic City racetrack and an unused manufacturing plant in Pittman serve as the first areas used for staging mutual assistance crews, stockpiling materials, pre-packing storm trucks, dispatching trucks, and providing office space. Activating temporary storage areas takes about 24 hours. Pre-event preparation uses store rooms at local crew-dispatch centers to store materials. Resources at each District also pre-load logistics trailers with emergency materials for quick access by responding crews. A list of commonly used vendors and informal agreements with sources of temporary housing offer quick-response to housing, meal, and other accommodations for out-of-town resources. Contracts with hotels and verbal agreements with a number of institutions (*e.g.*, Rowan University) exist as well.

g. Mutual Assistance

Planning for event response needs to consider the sufficiency of internal resources to complete restoration reasonably promptly. The electric utility industry and its many workers have long and properly been praised for their dedication to supporting other companies and customers in need in the wake of major weather events. All the Exelon utilities have access to other-utility resources under formal mutual assistance agreements and arrangements. PHI is a member in two Regional Mutual Assistance groups (RMAGs) - - the North Atlantic Mutual Assistance Group (NAMA) and the Southeastern Electric Exchange (SEE). Like others, PHI can also reach out to the other mutual assistance groups organized regionally across North America.

While extremely valuable to maintain, combining PHI with Exelon has proven sufficient in recent years to perform restoration without reliance on outside sources. Exelon has been rationalizing methods, practices, procedures, and tools among all its operating utilities, with its Peer Group process allowing integration to take advantage of best practices among them. The integration process improves efficiency when compared with the use of outside resources, whose methods, procedures, qualifications, and field information sources and tools can vary widely. The PHI utilities have not used or even found themselves forced to contingency plan for outside resource use in more than two years.

h. Pre-Event Impact Assessment

Damage modeling in advance of and through storm events provides an important means for marshalling, staging, and deploying resources engaged in restoration activities. In 2016, PHI began using an internally-developed, software-driven, Damage Prediction Model to help it predict the extent of outages be expected to ACE facilities from approaching weather. Historical outage data feeds the model, which PHI has not integrated with its Outage Management System. The model provides a system-wide (not district segmented) assessment of potential impacts. The model does not replace storm damage experience and local system knowledge as the principal means for marshalling resources. Nevertheless, frequent model runs before and during events provide management with an overall gauge of likely response requirements and overall restoration times.

The Emergency Preparedness organization runs the Damage Prediction Model when it finds a greater than a 20 percent probability of occurrence of a Level 4 Storm affecting the ACE system. Results go to the PHI Director of System Operations and to Regional Directors of Operations & Engineering, among other stakeholders.

Management assigns storm-impact levels from level one through six, based on predicted storm damage estimates. It uses the storm level to prepare its Incident Management Team, employees, and customers for the approaching storm. Restoration experience and damage prediction software drive judgments about expected impacts of approaching weather, with expected repair and restoration activities in turn driving estimates of required resources. An approaching storm threatening significant consequence triggers activation of an Incident Management Team (IMT) based on escalating threat levels. The lowest category, a *Level 1* Storm presents no threat of significant impacts.

Level 2 Storms consist of those likely to affect less than 10,000 customers and require less than 300 Outage Management System orders. They involve expected outage durations of less than eight-hours. Typical Level 2 storm types include isolated thunderstorms with occasional lightning, 35-mph winds, minor snow fall, or minor icing. Approaching Level 2 threats do not trigger activation of an Incident Response Team. Management uses its Outage Management System to generate estimated times of restoration.

Level 3 Storms involve impacts to between 10,000 and 50,000 customers, requiring less than 750 Outage Management System orders. Expected outage duration is less than 24 hours. Typical Level 3 threats include moderate thunderstorms with moderate lightning, 45-mph winds, significant wet snow fall of less than four inches, or 1/4 to 3/8 inches of icing. System Operations management or the ACE Incident Management Team leader can declare a Level 3 event threat, without necessary activation of an Incident Management Team. The Outage Management System generates estimated times of restoration until their dates begin to fall more than 24 hours in the future.

Level 4 Storms comprise those with possible impacts to between 50,000 and 100,000 customers, and requiring less than 1,500 Outage Management System orders. The expected outage duration is less than three days. Typical threats include severe thunderstorms with frequent lightning, 55-mph winds, significant wet snow fall of more than four inches, or 3/8 to 1/2 inch of icing. The ACE Incident Management Team leader in consultation with the PHI Incident Support Team leader, deputy leader, and the Chief of Staff may declare a Level 4 event threat. Customers receive a global estimated time of repair within 12 hours of the declared end of the weather event.

Level 5 Storms involve possible impacts to between 100,000 and 200,000 customers, requiring less than 2,500 Outage Management System orders. Expected outage duration exceeds more than three days. Typical threats include very severe thunderstorms with more than 55 mph wind, significant wet snows exceeding eight 8 inches, or icing greater than 1/2 inch. Level 5 storms bring PHI and ACE's Incident Management Teams activation, and opening of the Emergency Command Center. The PHI Incident Support leader may declare a Level 5 storm event. Customers receive a global estimated time of restoration within 24 hours of the declared end of weather event.

Level 6 Storms involve impacts to over 200,000 customers, requiring more than 2,500 Outage Management System orders. Expected outage duration exceeds five days. Typical threats include very severe thunderstorms or derechos with winds over 60 mph, significant wet snow exceeding 10 inches, or icing greater than 1/2 inch. Level 6 declarations activate Incident Management Teams and opening of the Emergency Command Center. The PHI Incident Support leader may declare a Level 6 storm event. Customers receive a global estimated time of restoration within 24 hours of the declaration of the end of the weather event.

Management employs a District Activation Guide to trigger preparedness activities for events posing threats at the ACE District level. Level designations use lower outage levels:

- Level 1 - - no expected material threats
- Level 2 - - >10,000 customers affected
- Level 3 - - Between 10,000 and 25,000 customers affected
- Level 4 - - Between 25,000 and 60,000 customers affected
- Level 5 - - More than 60,000 customers affected, requiring more than 500 Outage Management System orders
- Level 6 - - More than 60,000 customers affected, requiring more than 1,000 Outage Management System orders
- Second Role Emergency Management and Personnel Duties.

i. Incident Management Teams (IMTs)

The Incident Command System assigns employees to duties upon the institution of Incident Management Teams. Management mobilizes the teams on the approach of events classified higher levels, as described in the preceding subsection. System Operations prioritizes responder activities, coordinating district Incident Management Teams who identify resulting resource needs. These district teams route resources to staging areas where required, using the Outage Management System to queue work orders, assign and manage resources, track completion status, and close out field restoration work orders. An Operating Manager from the district leads its team, with other managers and supervisors assigned to directing team resources, logistics, support, and communications.

An Incident Command Center across the hall from ACE's Mays Landing Operations Control Center provides a base for ACE-wide Incident Management Team operations during major outage events. This area employs its own displays of Outage Management System and SCADA displays used to monitoring outages and restoration activity. A room nearby provides an operations area for crisis communications use. District Incident Management Teams also use spaces set up to support their local restoration-management work activities. A PHI corporate-level Incident Support Team provides support to the ACE and district teams. A PHI-level Crisis Management Team consisting of senior executive leadership provides strategic direction in cases of events affecting multiple operating companies.

The Incident Management Teams determine personnel and contractor availability, and establish communications with the Outage Management System and with groups having response functions. The teams bring their members together, schedule response resources, transfer personnel as needs require, schedule contractor resources, and communicate with other PHI and Exelon utility management about possible support needs. As response work continues, the teams continue to monitor weather forecasts and work requirements that may require resource adjustments.

j. Damage Assessment

Damage assessment forms an essential first source of activities in identifying repairs needed, establishing estimated repair times, and making damage sites safe. Personnel trained in damage assessment assist first responders in identifying, evaluating, and reporting facility damage as soon as possible after severe weather has passed. Management places damage assessors and wire guards on alert. Downed wires may remain energized, posing a public hazard. ACE dispatches trained personnel to guard them until verification that they are de-energized. Aircraft assessment occurs when road access is not possible. Damage assessment drives planning and activation of restoration work and preparation of estimated times of restoration. System Operations and Incident Management Teams evaluate readings and reports of system equipment status via the Outage Management System. They monitor 911 calls and the number of priority customers affected. Information of these types drives the dispatch sequences for assessing transmission, sub-transmission, and distribution system facilities.

Linepersons generally conduct assessments and repair damages where possible for Level 1, 2, and 3 events. The use of personnel assigned to emergency duty often conduct driving and walking assessments, given the more widespread scope and scale of damage. First responders and linepersons get assigned to other field work in those cases. Mobile Data Terminals have the capability to guide assessment and support reporting to the Outage Management System. As they follow main feeder and then their three-phase laterals, the assessment teams enter data for Outage Management System outage tickets, and call in other information, such as resource and equipment needed, to a Damage Assessment Coordinator located in each District's Storm Room. ACE uses the Outage Management System to prioritize and route resulting repair orders to the most suitable repair work queue.

Crews can perform temporary repairs needed to restore service, where safe to do so. Tracking of them supports later, post-restoration work orders to make repairs permanent. Crews enter immediate, temporary repairs so as to include them in the Outage Management System Storm/Construction queue. Repairs that will await later work during restoration enter a follow-up queue. Final, completed repairs also enter the Outage Management System. District offices monitor the queues and, assigning crews to conduct permanent repairs when and as appropriate and available.

k. Estimated Times of Restoration

The restoration time estimates just discussed serve important customer needs and desires to know approximately the amount of time they will not have electric service. As severe weather passes, a utility should begin determining estimated restoration times and reporting these estimated restoration times to its customers. Customers view estimates of restoration as a promise and missing the mark can negatively impact customer satisfaction, especially as the restoration event lengthens.

Following safe completion of damage assessment, management begins developing estimated restoration times, reflecting the level of system damage, outage numbers, resource availability, weather and site conditions, safety, and restoration priorities. The Storm Management application of the Outage Management System calculates for publication restoration time in the categories described above. It gives way to a single estimate for the entire area affected when it begins generating durations more than 24 hours out. At that point, the Regional Incident Management Team issues a single, Global Estimated Time of Restoration, based on when management expects to have restored 90 percent of all customers affected. Individual estimated restoration times are established after crews arrive at each affected site.

l. Communicating with Customers, Responders, and Stakeholders

ACE's public website provides outage-related information to customers and website visitors through its Outage and Storm Center web pages. Customers can review general information on storm response, find the number to call to report an outage, report an outage through the website, view a map of current outages, and view individual account outage status. The outage map displays the number of outages by county-municipality or location and indicates the number of impacted customers and the restoration times. An available mobile app allows users to obtain the same information and perform the same functions. Management also monitors and shares information to stakeholders via popular social media sites such as Twitter, YouTube, and Facebook.

The PHI Crisis Communications Incident Response Plan establishes a framework for managing major-event communications internally and with customers, the public, emergency response organizations, public officials, and the media. It covers widespread outages, natural disasters, epidemics, and man-made crises, including labor strikes. Activation Incident Management Teams also triggers opening of a Crisis Information Center (CIC), to:

- Gather accurate event data and information
- Develop and distribute timely, consistent messaging and communications to all audiences
- Proactively communicate to customers through media, social media, web updates and advertising
- Respond to media inquiries and social media postings and inquiries
- Monitor media (social included) for articles and relevant stories and information.

PHI's Vice President of Communications directs Crisis Information Center operation and a Crisis Information Strategy Team (CIST) - - the later activated for Level 3 and higher events. The Center coordinate information dissemination, employing:

- Regional Information Liaisons, who provide an Event Statistician with information about crew locations, outages and estimated times of restoration
- Message developers, who prepare communications, talking points, press releases and the like, under a formal message approval process
- Circulation of approved communications using resources like the call center, Government Affairs and company communications personnel, and channels like websites, social and news media, advertising, conference calls, and public policy liaisons
- Interactive Communications Coordinators, who disseminate photos, video, key messages and other information, and help customers getting questions answered by knowledgeable sources, and engaging in social media conversation
- Media Information Coordinators, who inform media, respond to their inquiries, and correct errors identified through media monitoring.

Pre-storm communications with employees inform them of the need to prepare for storm duty and long hours, and update them on the progress of nearing weather threats. Similar communications keep Regional Mutual Assistance Groups informed ahead of time. The Incident Management Team, Incident Support Team, and Crisis Information Center Conference participate in conference calls to monitor and adjust pre-storm preparation. Company email, intranet, phones, and pagers all provide internal communications channels. During events and response to them. Incident

Management Team, Incident Support Team, and Crisis Information Center conference calls continue.

Media outreach, new conferences, social media, updates to websites, scripts for inbound and outbound customer calls, advertising, on-hold messaging, individual calls to regulators, and conference calls for public officials provide customers and stakeholders with updates during events and restoration efforts in their aftermath.

An outside firm (West) hosts an integrated voice response platform that allows customers to interact with the company absent human intervention. Customers can use it to self-report service outage and get restoration status updates, report downed wires and other emergencies, and report dim or flickering lights and other power problems. The platform immediately routes reported emergency conditions to a customer service representative, and allows all completion of all other options without the assistance of a representative. The system available to ACE customers includes options to callers having trouble with the technology or wanting to speak to a live agent. The high-volume Outage Line capacity automatically expands to accommodate up to 100,000 outage calls per hour during storms and large outages.

West communicates repair "tickets" to ACE's Outage Management System in or near real time, initiating the restoration process. Restoration status updates go to West, making the latest information always available to callers.

In addition to the high-volume call handling service, management can deploy personnel assigned to that emergency duty role to answer phones. It can also draw upon employees from other Exelon contact centers, as needed.

As events wind down, the center develops messaging and materials that capture summary event data and information, acknowledge customer support and patience, and thank employees, crews and any outside agencies and government officials.

m. <u>Incident Close-Out and Assessment</u>

Deactivation of Incident Management Teams requires:

- All commitments for restoration to be known and met
- Identification of all outages associated with the original event and newer ones added
- Sufficient activity close-out so as not to burden a potentially exhausted operations group
- Communicating stand-down criteria and timeline to transition back to normal activity
- Key reporting completion (*e.g.*, time, date, and location of last customer restored by county
- Demobilizing mutual assistance crews and check-out procedure completion
- Completion of work orders and return of dispatch to System Operations
- Accounting for all crews.

Management conducts post-event line patrol damage assessments on circuits experiencing protective device operations during the storm. Items inspected include poles, cross arms, braces, insulators, lightning arrestors, guy wires, conductors, and cables. District operations and vegetation management review the damage assessment reports and make sure that permanent repairs are completed, as required.

Management also conducts post event lessons learned evaluations to identify gaps and improvement opportunities. Each Incident Management Team has responsibility for debriefing meetings with each outage-response organization. Management uses an Assessment Analysis Model to evaluate preparation and response performance. The assessments assign ratings and provide for comments in the categories shown in the next table. The ratings assignable include: (0) Does Not Apply; (1) Improvement Required; (2) Process Good, Training Required; (3) Process Good, Implementation Adequate; (4) Process and Implementation Effective.

Storm Event Self-Assessment Categories

Category	
Safety	Resource Utilization – Requesting Area
Priorities and Codes	Resource Utilization –Responding Area
Incident Severity Classification	Resource Utilization –System Operations
Documentation, Retention, and Storage	Resource Utilization – Damage Assessors
Pre-Event	Resource Utilization – Mutual Assistance
Weather Monitoring	Vegetation Management and Process
Notifications for Preparations – Checklists	Company Facilities Removal
Internal Communications	Flood Prone Substations
External Communications	Staging Sites
Emergency Management Agency Communications	Temporary Repairs
Customer Communications	Mutual Assistance Process
Activation Approaches and Triggers	Post Event
Regional IMT and District Teams	Incident Event Response De-activation
Pre-Event Resource Staffing	Event Reporting
Logistics	Plan Development
Utilities Interactions	Training
Operations Event	Incident Response Role Database Maintenance
Event Checklist (Situation Awareness)	Regional IMT Roles
Damage Assessment Process	District/Service Center Roles
Wire Down Response and Procedure	Storm Level Trigger Points
Order, Area, and Circuit Breaker Restoration	District/Service Center Activation Guidance
Transmission System Emergencies	Lock Out Tag Out Overview
Internal Communications	

3. *Conclusions*

29. Management has implemented the recommendations arising from Irene, Sandy, and Bow Echo.

We examined efforts to address the more than 60 Sandy-related recommendations addressed in the BPU's January 23, 2013 Order in Docket No. EO11090543, the eight Sandy-related recommendations from the May 29, 2013 Order in Docket No. EO12111050, and the eight Bow Echo-related recommendations of the September 11, 2015 Order in Docket No. EO15080984.

30. The storm preparedness and restoration manual, procedures, and practices generally comport with BPU orders and largely reflect good utility practices, but exhibit features warranting improvement.

The Emergency Operations plan is sufficiently comprehensive in scope and detail, and provides clear direction to those engaged in event preparation and response. It addresses nearly all elements of storm preparedness, restoration response, and post event analysis.

31. Management provides effectively for the organization and resources necessary for storm preparation and response.

Management makes provision for a dedicated organization, led by sufficiently senior, experienced, and trained personnel, and sufficiently staffed to support preparation and response activities. The well-structured incident management approach to timely restoration conforms to good utility practices. Emergency Operations Plan instructions details all activities required and management provides training for employees with pre-assigned emergency duties.

32. Management has an effective approach and uses sound measures to monitor conditions posing threats, and for preparing to meet them.

Management timely monitors approaching weather, and uses well-designed methods to estimated potential system impacts and outages. It uses the results of those methods to pre-plan response approaches, methods, and resources matching predicted impacts. Those plans adjust as weather events approach and as better information about likely impacts emerges. Training, checklists, emergency drills, and after-the-fact assessments (of both drills and actual events) prepare planning and response personnel, and inform management in adjusting both pre-and post-event processes, measures, and resource assignments and marshalling, based on lessons learned. Appropriate procedures govern pre-event internal and external communications with government authorities and emergency-response agencies, customers, other stakeholders, and other utilities.

33. Several specific measures would enhance restoration activities. *(See Recommendation #9)*

First, ACE has its updated EOP-related checklists located in other documents. However, it should either include, or clearly reference the location of, the Staging Area Checklist and the Crew Leader and Crew Daily Checklist in the EOP. *Second*, the Crew Leader checklist should incorporate a number of safety-related requirements to be met before energizing any feeder section: (a) inspection of the entire feeder section for tree contact and damage to the primary and secondary conductors, (b) inspection to every street-to-house service conductors energized with energization of the feeder section, and (c) disconnection of every damaged secondary and service from the primary before energizing the primary. Management should also adopt procedures clearly assigning to Distribution Operators and crew leaders clear responsibility for verifying these inspections and activities.

Energizing service wires downed by trees can pull meter bases from houses and expose the public to energized downed service wires. Energizing a service drop to a damaged meter base, and possibly a damaged house electrical panel, can cause and has caused house fires during hurricane restorations.

34. Effective web and mobile based platforms support customer communications related to storms, outages, and restoration times.

A web-based platform serves a number of outage-related customer communications purposes. A mobile application facilities customer information before, during, and after events. This application affords an efficient means for customers to report "lights out" situations to ACE. The website, outage map, and mobile application relay key information and status, updated as restoration continues.

35. Management employs a robust Crisis Communications Plan, but its Customer Care Storm Emergency Response Plan is not up to date. *(See Recommendation #10)*

A robust Crisis Communications Plan provides instructions for required activities. It includes scripting and messaging to support communications during a major storm or outage event. Management reviews and updates the plan annually, and makes communications effectiveness a central element of the annual emergency exercise. However, the most current Customer Care Storm Emergency Response Plan (dated April 28, 2017) has not undergone updating to reflect recent changes to key supporting technologies and outage communications strategies. Reflecting the shift management has made from Twenty First Century Communications (TFCC) to West as the Company's high-volume overflow service provider stands as the most notable omission. The plans also do not reflect discontinuation of the Xerox Crisis Call Centers and MARS, which management indicated would be replaced by Call Center mutual assistance from other Exelon operating companies, as needed during a large event.

4. Recommendations

9. Include the Staging Area and the Crew Leader and Daily Checklists in the Emergency Operations Plan, and amend the Crew Leader Checklist to incorporate inspections and verification requirements that should occur prior to re-energizing feeder sections. *(See Conclusion #33)*

References to the checklists cited are:

- Staging Area Checklist: attached to BPU-48 (January 23, 2013 Board Order No. EO11090543)
- Crew Leader and Crew Daily Checklist.

The conclusion referenced as underlying this recommendation details the activities and verifications we recommend.

10. Update the Customer Care Storm Emergency Response Plan to reflect recent changes to key supporting technologies and outage communications strategies. *(See Conclusion #35)*

Examples include the Twenty First Century Communications (TFCC) to West, discontinuation of the Xerox Crisis Call Centers and MARS, and replacement by mutual assistance from other Exelon operating company call centers.

I. Distribution Planning

1. Background

We examined distribution system planning criteria and their application and the designs used for the ACE distribution system. We considered voltage level maintenance, equipment ratings, reliability standards, sectionalizing, substation design, source redundancy, compliance with NESC guidelines, and distributed energy resources.

2. Findings

a. National Electrical Safety Code Compliance

Management applies the National Electrical Safety Code (NESC) in planning its distribution facilities. Our audit work in the areas preceding those discussed in this portion of this chapter confirmed that application in general ways. We selected conformity with National Electric Safety Code rules applicable to Grade C and Grade B overhead line construction to test code compliance. These requirements address strength required to withstand at least 0.5 inch of radial ice, with a wind loading of 4 lbs. per square foot, at 0° F. These construction requirements, however, are not intended to provide distribution line and pole strengths necessary to withstand conditions exceeding those expected worst weather conditions, or to withstand the weight of fallen trees.

The design standard used for ACE facilities comports with the code NESC standard. The company Grades of Construction and Safety Factors Distribution Standard indicates, as a minimum, construction to Grade C standard for overhead distribution lines, with stronger Grade B construction (which includes double cross arms, double insulators, and guyed terminal poles) for crossings over main-line railroad tracks, over limited-access highways, and where spans cross each other. Management also incorporates a number of safety factors in line and pole calculations to provide extra strength. Installing stronger-grade poles than required and the ground-line inspection and treatment program in place for many years have helped to ensure pole strength continuing to meet strength requirements as equipment ages.

b. Voltage Maintenance

PHI cites conformity with N.J.A.C. Title 14:5-3.2 electric service requirements as a basis for design and operation of the ACE electric system. The N.J.A.C. requirements call for supply with a standard secondary voltage that does not vary more than four percent above or below the standard voltage for five minutes, to the extent not caused by events outside company control or by customer-apparatus operation violating utility rules. PHI's Distribution System Planning and Design Criteria addresses the N.J.A.C. requirement and other usual customer expectations, stating that its design criteria seek to (a) to provide adequate voltage levels to customers, (b) prevent exceeding applicable equipment ratings under normal and probable contingency conditions, (c) provide reliable service, and (d) provide adequate electric system efficiencies by providing adequate reactive support. ACE utility system construction, configuration, and operation should also follow National Electric Safety Code guidelines, and account for in-service and future distributed energy resources connection to the distribution system.

Applicable design criteria require that a distribution system that maintain a steady state voltage at customer connections of plus or minus 4 percent on a 120-volt base (a minimum of 105 volts, under probable contingency conditions). The criteria also call for maintaining an imbalance between phases on a three-phase connection of no more than 15 percent, on unloaded customer connections. Capacity Planners conduct short range peak load forecasts, using historical peak loads scaled for expected changes in load due to new customers, load transfers, system reconfigurations, and other causes. Planners develop "Construction Recommendations" to address voltage violations that their modeling identifies. Distribution Engineering investigates more immediate service voltage concerns, using various voltage recording devices. For Longer Range Planning, a Ten Year Forecast Book further identifies potential criteria violations and proposed projects to address over a ten year period.

Load tap changing transformers (LTCs), line voltage regulators, and capacitors, maintain distribution feeder voltage above the minimum acceptable level. Feeder conductors sometimes require upgrades (more capacity) to prevent excessive voltage drops on long, densely populated feeders, especially when feeders must have the capacity for load transfers.

c. Equipment Loading Criteria

Equipment ratings should establish maximum normal long-term equipment loadings that do not cause equipment degradation or operational issues. Higher maximum short-term loadings for emergencies and other temporary system-configurations, while necessary and appropriate, also need to be set in a manner that does not produce excessive equipment degradation. Management's general strategy with respect to loading calls for a system that can reliably operate at peak loads without exceeding normal equipment ratings, assuming all related facilities, including firm distributed generation, in service.

The Distribution Planning organization assigns equipment normal capacity ratings that permit continuous operation at that level (not necessarily the manufacture's rating) with minimal or no thermal aging over the expected life of the equipment. Higher assigned emergency ratings address peak load conditions and non-standard configurations (*e.g.*, for construction or outage work). These emergency ratings permit operation of equipment in excess of normal capacity but not above ratings for up to 24 hours timeframe for all related facilities.

The setting of emergency ratings employ pre-determined levels of acceptable loss-of-life calculations, consider excessive conductor sag, and seek to prevent equipment damage. These 24-hour ratings seek to provide time for corrective actions, such as setting a mobile transformer, or transferring loads among substations and feeders. Distribution Engineering uses industry-accepted calculation methods for determining normal and emergency conductor ratings, including the Neher-McGraht equation and IEEE Standard 404. Setting cable-loading ratings also considers manufacturers' operating temperature allowances.

Transmission and Substation Engineering bases substation transformer ratings and allowed loss of transformer life on IEEE Standard C57.91-2011 "Guide for Loading Mineral-Oil-Immersed Transformers and Step-Voltage Regulators." Each transformer gets ratings after application of the EPRI-developed Power Transformer Load (PT Load) software program. The program uses transformer data and transformer factory test results to determine the normal and emergency load levels for a range of ambient temperatures. The calculations show expected loss of transformer life per day as a function of the operating temperatures associated with normal and emergency ratings.

d. Feeder Equipment and Configuration

Following the merger, PHI adopted a new approach to configuring feeder systems, seeking to reduce exposure to faults. Standards for new 12 kV feeders call for limiting them to serving no more than 2,000 customers sectionalized into groups of about 500 using automatic circuit reclosers, and feeder-tie devices. We found ACE distribution design and configuration typical of and in some cases beyond what we have seen at utilities operating under reasonably comparable environmental and geographic circumstances. The ACE distribution system consists primarily of largely overhead, radial 9-4 kV, 297-12 kV, 31-23 kV, and 7-34 kV feeders. Operators can tie nearly all ACE feeders to others in efforts to transfer load among them as contingencies occur.

Some feeder redundancy exists in Atlantic City, served by a low voltage network capable of withstanding one contingency without outages. Other Atlantic City customers take service from underground primary feeders. ACE otherwise makes use of only short underground sections in other mainline feeders. ACE employs looped underground residential distribution laterals, allowing first responders to transfer affected loads when one cable section fails.

We described earlier in this chapter (see for example the sections addressing Outage Management) the use of automatic circuit reclosers, automated sectionalizing and restoration schemes, and electronic fuses that can operate multiple times. Methods such as these have expanded the ability to transfer loads among ACE feeders. They comprise major elements of the Reliability Improvement Plan programs discussed earlier in this chapter.

Electronic fuses (referred to briefly above) protect main feeders from faults on fused lateral feeders. The older, "one-shot" fuses replace blow for both sustained faults and monetary faults of the laterals. About three quarters of fault causes have only a momentary duration (*e.g.*, when caused by wind-blown branches contacting conductors), but blown fuses cause customers on lateral feeders to experience sustained outages, pending arrival of first responders. Management has been employing a modern electronic fuse (called a "Trip Saver") to replace the older fuses in cutout switches. This newer electronic fuse, small and comparably inexpensive, automatically restores power to the customers interrupted by momentary faults. Trip Savers rotate out of position for faults they cannot clear, allowing first responders readily to identify de-energized lateral feeders. The PowerAhead program discussed earlier in this chapter includes additions to the 81 electronic Trip Saver fuses installed by early 2018, with completion of their installation slated for 2019.

e. Substations

The current ACE population of 120 substations includes 14 categorized as having have "firm" (or "n-1" redundancy). They employ combined transformer and bus configurations that offer emergency capacities sufficient to carry substation peak load with one transformer failed or out of service. Another 70 distribution substations have a "semi-firm" designation either because assistance from a mobile transformer (62 of them) would continue to carry load with a transformer out, or because load could be transferred to another substation. The remaining 36 "non-firm" substations employ a single transformer and a single bus. Six of these substations can transfer load to "hot spares" located within the substations. Feeder by-pass switches in six substations allow feeder breaker maintenance without interrupting service to customers and operators can tie feeders together for servicing circuit breakers in other substations.

We found that access exists to appropriate types and numbers of mobile transformers and substations. Temporary replacements for maintenance or failures come from 21 mobile distribution transformers at Mays Landing or one at Glassboro Substation. Thirteen of them include mobile 69 kV circuit switchers and 12 kV circuit breakers, making them mobile substations. The transformers range from 2 MVA to 50 MVA, and can operate in various configurations at 138 kV/69 kV/34 kV on the high voltage sides and at 23 kV/12 kV/4 kV on the low voltage sides.

Two overhead 138 kV, 69 kV, or 34 kV lines, serve each ACE distribution substation, with most of the 69 kV circuits serving them installed on the same pole structures.

f. Reactive Power (VAR) and Voltage Control

Two kinds of power flows on electric systems:

- Real Power, which does work and for which residential customers pay
- Reactive Power, which does not do work, but which equipment like induction motors, air conditioners, and transformers require to produce the magnetism that makes them function.

Generating stations can provide a source of reactive power ; alternatively, banks of feeder-mounted or substation capacitors can supply it. The current required for reactive power causes energy losses and voltage drops. ACE installs capacitors on feeders to reduce current and increase voltage on feeders, and capacitors in substations primarily to do so on the transmission system. The capacitor population includes fixed, switched, and automatically controlled types A power factor of 1.0 results when capacitors provide all reactive power required at a substation.

ACE's seeks during summer peak conditions a power factor of about 1.0 on its overhead feeders and substation buses, while avoiding a 0.95 leading power factor (too much capacitive current), which would also cause energy losses and over voltages. ACE's use of capacitors produced in 2017 an average power factor for its 136 distribution transformers of 0.99 - - a performance level confirming their effectiveness.

Following a 2013 BPU Distribution Automation Order, management began to implement a Distribution VAR Dispatch (DVD) system for control of capacitors. This centralized system monitors and controls distribution feeder capacitors. It automatically performs capacitor switching to achieve a targeted power factor. ACE piloted the program at is Glassboro, Lamb, Terrace, and Washington Substations, outfitting all capacitor banks on the substations' feeders with communications equipment. The program has yet to expand beyond the initial group of four substations.

g. Distributed Energy Resources

Chapter VIII, *Merger Conditions*, contains a Distributed Energy subsection describing a settlement and a supplemental agreement with the Alliance for Solar Choice (TASC). That settlement and agreement produced a series of commitments to actions intended to enhance interconnection of behind-the-meter distributed renewable generation and storage energy projects on the ACE system. As we reported in the Merger Commitments chapter, management has been meeting the requirements of the commitments. Particularly noteworthy in connection with our review of distribution planning, management continues to work with stakeholders, including the Alliance for Solar Choice not just on planning and analysis with respect to distributed resource interconnection, but also on, reporting, administration, and other technical requirements.

3. Conclusions

36. The overall configuration of the ACE network makes appropriate use of equipment and approaches to sustain reliability levels and voltages.

Management makes appropriate use of voltage regulators and capacitors to support required voltage levels. We found a sufficient level of redundancy in substations and feeders, through the use of techniques like feeder ties, low voltage networks, and underground residential development loops. Management has increased its use of sectionalizing using automatic circuit reclosers and electronic fuses, and automatic sectionalizing and restoration schemes that employ Smart Grid technology.

ACE's feeder design conforms to National Electric Safety Code guidelines. The system employs appropriate substation and feeder configurations, and considers contingencies appropriately. Configuration Management employs sound normal and emergency equipment ratings, permitting maximum loadings without excessively reducing equipment life. Management also considers connected and planned distributed energy resources when applying system planning criteria.

37. Post-merger design criteria and practices promote reliability improvement.

Design standards for new 12 kV feeders now limit them to serving no more than 2,000 customers, and call for automatic circuit reclosers to provide sectionalized customer groups of 500, and for feeder-tie devices. The criteria for new substations also employ more stringent outage contingencies.

4. Recommendations

We have no recommendations beyond those addressed under the subsections addressing Outage Management and Reliability Improvement.

J. Load Forecasting

1. Background

Two organizations make transmission peak load forecasts. Regional Transmission Organizations (RTOs) conduct them for member utilities to ensure sufficient, stable, and reliable electric energy, at the generation and transmission network system level. RTOs apply large staffs of economists and statisticians, and use highly sophisticated tools to model and assess future transmission system peak loads. Both RTOs and utilities use engineering staffs to conduct transmission system load flow, voltage, stability, and contingency studies to determine transmission system capacity upgrades necessary to provide transmission system reliability, under peak load and contingency conditions.

Utility planning makes use of transmission line, distribution feeder, and substation peak load forecasts in identifying capacity expansion projects to ensure that each system element will reliably operate within planning criteria. Planners use a variety of tools to model load flows and voltage drops during peak load conditions, under various contingency system configurations, based on current peak loads, on load growth trends, and on new business data provide by account representatives.

ACE serves a population of about 1.1 million. Since 2011, energy sales declined over six percent, influenced significantly by the closure of five Atlantic City casinos. Customer-owned solar generation and energy efficiency programs have also influenced sales. However, some areas have grown, requiring timely identification of capacity expansion needs and timing.

2. *Findings*

a. Forecasting Organizations

The PJM Interconnection operates as a regional transmission organization coordinating wholesale electricity movement in New Jersey, Delaware, Maryland, the District of Columbia, Pennsylvania, Virginia, West Virginia, Illinois, Indiana, Kentucky, Michigan, North Carolina, Ohio, and Tennessee. PJM operates a competitive wholesale electricity market and manages the high-voltage electricity grid to ensure reliability. PJM's long-term regional planning process identifies grid improvements to ensure system-wide reliability and economic benefits. The PJM planning process includes its development of load forecasts, and stability and contingency studies.

PJM's Resource Adequacy Department provides an annual (in January) comprehensive peak load forecast report for PJM planning purposes. It uses a direct load long-term forecasting process that includes coincidental peak loads, net energy, load management and distributed solar generation for each member utility, including ACE. PJM's data indicates that ACE's summer transmission system peak load has substantially decreased since 2006, and will likely decrease slightly between 2017 and 2027.

The distribution capacity planning team responsible for the ACE system forecasts peak load at the substation and feeder level to plan the distribution system. This team uses the PJM load forecast only as a benchmark against the sum of its undiversified short-term substation forecasts. The team may apply growth and reduction factors based on the PJM load forecast, but adjusted for ACE's localized knowledge and trended growth.

b. Transmission Capacity Planning

ACE operates 230 kV, 138 kV, and 69 kV transmission systems. PJM's scope includes the 230 kV and 138 kV circuits as transmission facilities. The next table shows ACE's PJM-metered and forecasted transmission peak loads in megawatts.

ACE Summer Peak Transmission Loads

Year	Forecast	Actual	Variation	Year	Forecast	Variation
2012	-	2,810	-	2020	2,454	-0.80%
2013	2,733	2,740	-2.49%	2021	2,442	-0.50%
2014	2,750	2,444	-10.80%	2022	2,451	+0.40%
2015	2,664	2,553	+4.46%	2023	2,435	-0.70%
2016	2,524	2,674	+4.74%	2024	2,434	0%
2017	2,495	Not Avail.	-	2025	2,436	+0.10%
2018	2,486	Not Avail.	-0.40%	2026	2,440	+0.20%
2019	2,475	Not Avail.	-0.40%	2027	2,445	+0.20%

A PHISCo Transmission Planning organization (operating under Exelon's Transmission Asset Strategy and Planning Organization) monitors the transmission system elements for criteria violations, but does not forecast overall transmission system peak load. The PHI team's Transmission Planning Organization who reports to a PHISCo Manager of Transmission Planning manages transmission planning, with five persons responsible for the ACE and Delmarva systems. Transmission Planning conducts annual peak load analyses for each transmission element. It begins from non-weather adjusted substation peak load forecasts developed by Distribution Capacity Planning. Weather adjustments follow, employing both 50/50 and 90/10 bases. A 50/50 method using average temperatures for a designated period (sometimes 30 years) implies equal chances that weather conditions will be more or less extreme than the average. The 90/10 approach many use implies only a ten percent chance of more extreme than average weather.

Transmission Planning engineers then perform load flow and voltage studies using weather adjusted load forecasts to identify cases where resulting loads will exceed operating criteria on specific system elements. When this process identifies capacity expansion needs, Transmission Planning assess alternatives under the procedures used by Distribution Capacity Planning.

c. Distribution Capacity Planning

Distribution Capacity Planning has responsibility for producing feeder and substation peak load forecasts for ACE distribution facilities. A PHI Manager of Capacity Planning, with 36 years of capacity planning experience and an ACE Manager of Regional Capacity Planning with 13 years in various utility roles direct these activities. ACE's Capacity Planning group includes a General Engineer, two Engineers, and two Associate Engineers, who conduct load flow, reactive flow, voltage, and other studies. They also assist Operations Control Center's engineers in developing solutions for contingency conditions. ACE also has six District Planning Engineers. Distribution Capacity Planners annually conduct three-year peak load feeder and substation forecasts, from which they develop capacity expansion plans for half of the system each year. They also develop long-term peak load forecasts for use in preliminary planning for major projects, such as substations, as far out as 10 years.

Overall ACE peaks have not grown, but pockets of growth (*e.g.*, the Glassboro District) have existed. Planners use feeder and substation peak load forecasts to assist in identifying feeder and substation transformer capacity upgrades. The Capacity Planning team conducts peak load forecasts for ACE, and develops capacity expansion projects when indicated.

ACE does not utilize a 90/10 or 50/50 weather normalization in the traditional sense, but it instead base loads on the highest load period of the last 10 years and projects an expected growth on top of that. Management believes that this procedure allows it to consider the effect of weather on the distribution system. Planners total new loads connected to the feeders and substations since that day with the highest peak load. They compare the results to the previous year's peak loads, choosing the higher as the bases for feeder and substation forecasts, taking into account changes in system configurations and distributed energy resource installations. Most ACE feeders (326 of 354) have distributed energy resource connections. ACE had 23,474 active solar interconnection customers in November 2017, providing about 302 MW of distributed generation. These figures reflect an increase of 157 percent since January 2014. Other distributed energy resources, including wind generation, include 56 installations having a total capacity of about 29 MW, and 33 systems, having a total capacity of about 2.4 MW, remain pending.

The process of identifying the new loads to add uses information about new sources gathered from account representatives and distribution engineering's new business group, and by monitoring the real estate market. Planners also take into account planned system changes (*e.g.*, known construction, changes in equipment ratings, reconfigurations, and distributed energy resource connections) expected in the forecast period. The analysis focuses on loads in the summer - - the peak season for ACE by a wide margin.

The Planners use software-driven load flow and voltage drop studies to verify that each feeder and substation element has the capacity to operate within established ratings at forecasted peak load levels. The variability of photovoltaic generation sources has produced different criteria for operation at forecasted peak load levels, dependent on their operation:

- *In service*: operation of each feeder and substation transformer within normal capacity ratings, when all related facilities are in service, even during planned construction or maintenance.
- *Not in service*: operation of each distribution feeder and backup feeder and substation transformer within emergency ratings, when all related facilities are in service, within their emergency ratings, even during planned construction or maintenance.

Peak feeder and substation loads may not occur at the same hour or day. Determining coincidental peak substation loads has value for transmission planning. Capacity Planners perform forecasts and make capacity expansion decisions on the basis of non-coincidental feeder and substation peak loads. Planners do, however, use PJM peak load forecasts as a benchmark for examining the sum of non-coincidental short-term forecasts for each ACE substation.

d. Developing Solutions to Criteria Violations

Planners assess cases where their studies show that feeder or substation components cannot meet peak loads while operating within their established ratings. They outline candidate solutions, and work with engineering groups to select preferred alternative solutions, and prepare a Construction Recommendations for approval, prioritization, and eventual plan and budget inclusion. The first focus of this work lies on lower costs solutions, such as:

- Transferring load among feeders or substations
- Installing capacitors or voltage regulators
- Changing transformer no-load taps
- Changing the transformer load tap changer controls from voltage ratio control to phase angle control.

Where these alternatives will not work, attention turns to other, more costly alternatives, such as:

- Extending new feeders from existing substations
- Rearranging existing feeders
- Replacing smaller conductor or cable to larger size
- Installing new bus sections, transformers, or circuit breakers
- Rebuilding or adding sources to substations
- Installing new substations.

Substation Design has responsibility for producing all final designs.

e. Load Information Sources and Accuracy

ACE now has SCADA in almost all substations, after significant additions to this capability since 2013. Legacy telecommunication systems in some of the older substations still, however, do not have the telecommunications bandwidth to support remote measurement of peak loads. Planned installation of fiber optic communications at them will resolve this communications issue. Planners have access to peak load information (typically for hottest three days) for 88 percent of feeders from the Pi-Historian software program fed by the SCADA system. Distribution engineers or field personnel manually record load readings at the other 12 percent. These readings show maximum demand recorded since the last read and reset the time of that demand. Planners then compensate for feeder phase imbalance, non-coincidental transformer peak loadings, feeder power factor differences, and bus capacitors when calculating substation peak loading.

Possibly due to a mild summer, nearly all 2016 forecasted feeder peak loads for 2017 exceeded actual 2017 loads. No 2017 feeder peak loads exceeded 100 percent of normal ratings in 2017. Actual 2017 peak loads on only three of 126 substation transformers exceeded forecasted levels. One of those three experienced a large variation, with actual loads 45 percent above forecast. However, no transformer peak 2017 load exceeded 100 percent of its normal load rating. The only ACE summation of loads consists of adding each substations' peak load at the time it experienced it. Thus, ACE does not forecast and it does not measure undiversified (total of all substations from the same instant) load. Diversified measurements do not mimic undiversified ones, but do provide a rough indicator of forecast accuracy on a total basis. The 2016 forecast for 2017 amounted to 2,731, compared to the actual diversified 2017 peak of 2,137 MW (15 percent lower).

3. *Conclusions*

38. Appropriate organizations, staffed with capable and sufficient resources perform load forecasting and capacity expansion planning for ACE facilities.

Management approaches transmission forecasting and its use appropriately given the responsibilities that the PJM Interconnection has in planning and managing the region's bulk power system. Dedicated responsibility under senior, experienced leadership conducts forecasting and related capacity planning activities for the ACE system. The organizations make effective use of PHISCo and Exelon resources, while dedicating personnel to the ACE system.

39. Substation and Feeder Forecasting proceeds under comprehensive and well-designed methods, but has recently produced results that appear high. *(See Recommendation #11)*

Broadly and consistently high forecasts can lead to early expenditures on capacity resources that can be deferred, and in some cases avoided indefinitely. No feeders or substations operated above normal ratings in 2017. Viewed from one perspective, that result demonstrates a system that did not present great risk of disruption or equipment damage from intense levels of operation. Viewed from another perspective, it raises questions about a system that may have in a number of cases more than it needs in an area that has not experienced, nor is expected to experience substantial growth. While a far from perfect measure, the gap between diversified 2017 peak forecast and actual peak load was also large - - with actuals 15 percent under forecast.

40. Measurement of peak loads is appropriately supported by methods that produce a large portion of readings through accurate, automated methods.

SCADA monitoring of the ACE distribution system has greatly expanded since 2013, expanding automated readings to 88 percent of feeders. That percentage will continue to expand as SCADA application and installation of higher bandwidth communications links do.

4. *Recommendations*

11. Examine and implement means for improving distribution load forecasting. (*See Conclusion #39*)

Greater consistency between forecasts and actual loads on distribution facilities will improve the effectiveness of feeder and transformer capacity reinforcement. Avoiding persistently higher forecasts, compared to actual loads, can also produce economies (perhaps substantial) without adversely affecting reliability. The techniques used for ACE facilities are sound and comprehensive, but others use different ones. We understand that management is in fact examining alternatives as well. Planners do, as they should, apply judgment to information about individual substations and feeders, because their future requirements can be significantly affected by uncertainties about sources of growth, and particularly in ACE's case, reductions in future use.

Two important overlays heighten the need for attention to forecasting at ACE. First is the lack of growth and in many areas reductions in use. Second is the use of techniques (like the creation of feeder groups to provide for automatic sectionalizing and restoration). Feeder configuration can have a material impact on facility peak loads and further network improvement efforts remain a significant priority for ACE. These overlays affect risk (on a low- or no-growth system versus a high-growth one) and increase the importance of accurately modeling the effects of changed configurations.

Management should promptly complete its consideration of amendments to processes it uses to forecast distribution component peak loads for purposes of planning reinforcements. That consideration should be founded on comprehensive analysis of the factors addressed here and others that management's review finds relevant. The review should examine current means for making weather adjustments to ensure that they are not overstating risks of extreme temperatures at the peak season.

Chapter VII: EDECA Table of Contents

Chapter VII: EDECA

A. Chapter Summary

This chapter describes the results of our examination of performance under and compliance with the affiliate standards under New Jersey Electric Discount and Energy Competition Act (EDECA). The merger with Exelon significantly increased the number of ACE affiliates, but included only a few RCBS affiliates, whose operations focused on a small number of offerings. Management continues to take a view that service to other utilities or common carriers, providing high voltage or other specialty services or products to a limited number of commercial or industrial customers or providing telecommunications services is not subject to the Standards. We consider their position overly broad and not consistent with the intent of the Standards. We found two entities (no longer owned by Exelon or PHI) that served retail customers in New Jersey during the audit period, but were not considered by management to be RCBSs. ACE should eliminate the exclusion it makes for entities like those described above.

The ACE Compliance Plan generally treats the Standards thoroughly and effectively, but we did identify a number of cases where it should be changed. Management has made a sufficiently senior person responsible for Compliance Plan administration, but should document in the Plan specifically assigned accountability and responsibility for ensuring compliance with each section of the Standards. Management provides for the conduct of regular compliance plans audits. Periodic reviews of specific areas implicated by the Standards (*e.g.*, information technology and access to protected information) should complement them, however.

EDECA Section 14:4-3.3 prohibits a number of forms of preference or discrimination. We found no print or television ads or other written customer communications suggesting any preferences for an RCBS or RCBS customers, but not all audit period materials remained in existence. Recognizing that validation of compliance may come later, management should take measures to ensure retention of customer communications, including print, radio, television, and web advertisements pending such validation. Reviews of current and archived websites also showed no affirmative implication of preference, but not all websites set forth an appropriate disclaimer, and some do so in a manner questioning whether customers will observe disclaimers provided. Management should ensure consistent and sufficiently prominent disclaimer presentation on all affected web sites.

The Standards prohibit certain transaction types. Our examination found no indication that any prohibited transactions occurred during the audit period. The Standards also impose restrictions on energy and capacity sales involving affiliates. ACE did not offer any discounts or waivers on services provided to affiliates, or discriminate in favor of affiliates in applying tariffs. We found no evidence, direct or otherwise, of a tying of service from an affiliate to ACE utility services or of any assignment of customers. Our review disclosed no indication that ACE provided a retail affiliate with customer enrollment, marketing, or business development assistance, or that ACE provided customers advice or assistance with regard to an RCBS. Our review disclosed no ACE-offered discounts, rebates or waivers that would require posting or document retention.

EDECA Section 14:4-3.4 imposes Information Disclosure Standards. ACE operated under procedures generally supportive of limitations on disclosure of customer information to affiliates. Management took the position that doing so under a contract obviates the need for posting. We did not find support for such an exclusion. The disclosures made, chiefly to an affiliate providing meter reading services, does appear to warrant an exception, but one that should be narrowly construed to services contracted to perform necessary elements of ACE utility service.

ACE complied with listing and information-provision requirements involving generation service providers and involving use of information gained regarding such providers. Our audit activities broadly demonstrated adequate recordkeeping for affiliate transactions, bids, and contracts. We had full access to all records whose inspection we requested.

EDECA Section 14:4-3.5 imposes a variety of separation standards. The required separation of corporate entities and books and records existed. Books and records conformed to accounting requirements, and management made all accounting records and information we requested available. We also found compliance with space sharing and information system access requirements. ACE made no joint product or service offerings with affiliates during the audit period, and complied with the restrictions on shared services and joint purchasing with affiliates. We also found compliance with provisions seeking to protect confidential and market information, to address the use of the ACE name and logo, and to limit joint marketing with affiliates and their access to ACE advertising space.

EDECA Section 14:4-3.5 limits employee sharing; we found compliance with applicable requirements during the audit period. There were no employee transfers or temporary assignments during the audit period (except for Millennium - - a situation already addressed by the BPU), making requirements associated with them inapplicable. Similarly, we found no violation of restrictions on common directors, but did find common officers. Management views their joint service as outside the restrictions because they operate in shared services functions. We do not find support for such a distinction in the applicable section. We found that service transfers followed pricing requirements and that no asset transfers occurred during the audit period.

Section 14:4-3.6 of the Standards applies to any competitive services offered by the utility or an RCBS of the utility. This section did not apply during the audit period, because ACE, itself or through an RCBS, offered no competitive services.

Subsequent sections address a number of administrative provisions, all addressed adequately, to the extent required, in the Compliance Plan.

B. Background

This chapter describes the results of our examination of performance under and compliance with the affiliate standards (*Standards*) that the Board has adopted to enforce the New Jersey Electric Discount and Energy Competition Act, N.J.S.A. 48:3 -49 *et seq*. (EDECA). We also performed a review of cost allocation and assignment, which form a principal focus of EDECA. The report (see Chapter IV, *Cost Allocation Methods*) of that examination addresses the cost allocation and assignment requirements of the Standards and the governing documents and controls and procedures management has in place surrounding them. The specific categories into which we divided the work addressed in this chapter comprise:

- Holding Company Retail Competitive Services
- General Administration of the Standards
- Employees Guidance and Training
- Non-Discrimination
- Information Disclosure
- Separation
- Regulatory Oversight
- Dispute Resolution
- Violations and Penalties.

The Standards contemplate five principal types of entities:

- Electric or gas public utilities
- Related competitive business segments of the electric or gas public utilities
- Public utility holding companies
- Related competitive business segments of the public utility holding companies
- Service companies.

The principal components of the Standards fall into a number of main categories:

- Non-Discrimination (Section 14:4-3.3)
- Information Disclosure (Section 14:4-3.4)
- Separation (Section 14:4-3.5)
- Utility Retail Competitive Business Segment Standards (Section 14:4-3.6)
- Regulatory Oversight (Section 14:4-3.7)
- Dispute Resolution (Section 14:4-3.8)
- Violations and Penalties (Section 14:4-3.9).

The application of these depends on the types of transactions involved. For example, the Section 14:4-3.3, 14:4-3.4 and 14:4-3.5 standards apply to transactions between the utility, on the one hand, and its public utility holding company or a related competitive business segment (*RCBS*) of its public utility holding company that is offering or providing retail services to customers in New Jersey, on the other hand. These three sections, however, do not apply to transactions between a utility and an RCBS under its ownership. Conversely, the Section 14:4-3.6 standards do apply to transactions between a utility and its own RCBS; however, they do not apply to transactions between the utility and its public utility holding company or an RCBS of its public utility holding company. Nevertheless, substantial overlap exists among the standards set forth in Sections 14:4-3.3, 14:4-3.4, and 14:4-3.5. Similarly, overlap exists between them and the Section 14:4-3.6 standards.

Several key factors underpinned the review that this chapter addresses. Many of the Standards have implications that we have reviewed as part of audit activities associated with broader examinations of management audit topics. For these areas, our EDECA report focuses on management's treatment of these items in the annual Compliance Plans (the Plan), and provides references to the other chapters of this in the report where audit work (data reviews and analysis, interviews, for example) took place. Representative examples include:

- Discussion of Exelon- and PHI-level internal controls, internal audit, compliance, and ethics, and how management applies these to ACE: Chapter IX, *Executive Management and Governance*
- Broad coverage of cost allocation, transaction paths, and cost assignment issues, and key governing documents, such as the cost allocation manual: Chapter IV, *Cost Allocation Methods*
- Issues associated with books and records and chart of accounts requirements: Chapter XIV, *Accounting and Property Records*
- Customer service performance and training: Chapter XV, *Customer Service*
- Finance and money pool issues: Chapter XIII, *Finance and Cash Management*
- Independence and segregation of utility/non-utility planning: Chapters IV, *Cost Allocation Methods*, V, *Capital Allocation*, IX, *Executive Management and Corporate Governance*, and XII, *Strategic Planning*
- Information technology protocols and management: XXI, *Support Services*
- Affiliate energy transactions and relationships: Chapters III, *Power Supply and Market Conditions*.

C. Post-Merger ACE Affiliates

The PHI-Exelon merger introduced a large number of new affiliates for ACE, but audit-period ACE transactions with affiliates transactions proved limited, excepting the provision of shared services by two service companies Exelon Business Services Company (EBSCo) and the service company, PHISCo, serving the three PHI utilities. ACE provided only tariffed services to its affiliates, and offered no competitive service of its own (either to affiliates or to other parties), such as an appliance service business. The Exelon/PHI merger closed on March 23, 2016. With the merger came a significant increase in ACE affiliates, as the following charts illustrate. Pre-merger ACE affiliates totaled 17 entities; as of 2017 that number stood at 385.

D. PHI and Exelon's Retail Competitive Services

1. Background

A first effort of our review sought to determine those affiliates management considered covered by the Standards. The Standards define a Related Competitive Business Segment (RCBS) in the following ways:

- "Related competitive business segment of an electric public utility or gas public utility" means any business venture of an electric public utility or gas public utility including, but not limited to, functionally separate business units, joint ventures, and partnerships, that offers to provide or provides competitive services.
- "Related competitive business segment of a public utility holding company" means any business venture of a public utility holding company, including, but not limited to, functionally separate business units, joint ventures, and partnerships and subsidiaries, that offers to provide or provides competitive services, but does not include any related competitive business segments of an electric public utility or gas public utility.

- "Affiliate" means a "related competitive business segment of an electric public utility or a related competitive business segment of a gas public utility" or a "related competitive business segment of a public utility holding company" as defined in this section and in the Act.

Our prior performance of EDECA audits for the BPU have found wide variation in how holding companies determine which affiliates the Standards cover. The identification of covered affiliates comprises an important baseline element in assessing compliance. We examined how management made such decisions.

2. Findings

Management provided a list of products and services offered by each Exelon or PHI business. The large majority of these entities, totaling 345, neither operated nor had customers in New Jersey during our audit period. ACE's 2017 Compliance Plan identifies nine entities as offering or providing services to retail customers in New Jersey:

- *Millennium Account Services, LLC:* this joint venture of Pepco Holdings, LLC and South Jersey Gas provided meter-reading services to each's New Jersey utility operating companies: ACE and South Jersey Gas.
- *Atlantic Southern Properties, Inc.:* this affiliate was formed to own and manage real estate investments including the Mays Landing, New Jersey regional office where ACE is a tenant.
- *Constellation NewEnergy, Inc.:* this energy services provider sold electricity and related products and services and through its wholly-owned subsidiary *Constellation Energy Power Choice, LLC*.
- *Constellation Energy Gas Choice, LLC:* this affiliate sold natural gas and related products and services.
- *Constellation NewEnergy-Gas Division, LLC:* this affiliate sold natural gas and related products and services.
- *Constellation Solar New Jersey, LLC:* this affiliate owned small solar generation facilities in New Jersey that are qualifying facilities (QFs) under the Public Utility Regulatory Policies Act of 1978 (PURPA).
- *Constellation Solar New Jersey II, LLC:* this affiliate owned a small solar generation facility in New Jersey that is a QF under PURPA.
- *Constellation Solar New Jersey III, LLC:* this affiliate owned small solar generation facilities in New Jersey that are QFs under PURPA.
- *W. A. Chester, L.L.C.:* this affiliate (sold in February 2018) provided, (primarily to electric utilities) construction, installation, maintenance and repair of electrical transmission and distribution cable systems - - mainly underground high-voltage electrical systems and overhead electric systems.

Six separate annual Compliance Plans had effect during our audit period - - one for each year and a revised 2016 version created to identify the significant additional entities that became ACE affiliates following the merger. The annual plans indicated some variation in ACE and its Holding

Companies' affiliates that offer services in New Jersey. The following table lists the retail affiliates identified by the Plan in each year:

Compliance Plan-Identified Retail Affiliates of ACE

2017	2016	2015	2014	2013
Millennium Account Services	Yes	Yes	Yes	Yes
Atlantic Southern Properties	Yes	Yes	Yes	Yes
Constellation New Energy (CNE)	No	No	No	No
Constellation Energy Power Choice (owned by CNE)	No	No	No	No
Constellation Energy Gas Choice	No	No	No	No
Constellation NewEnergy-Gas Division	No	No	No	No
Constellation Solar NJ	No	No	No	No
Constellation Solar NJ II	No	No	No	No
Constellation Solar NJ III	No	No	No	No
W.A. Chester	Yes	Yes	Yes	Yes
Pepco Energy Services	No	Yes	Yes	Yes
Thermal Energy Limited Partnership I	No	Yes	Yes	Yes

Unlike other New Jersey Electric and gas operating companies, ACE has no appliance service business. Such enterprises require treatment as an internal RCBS. ACE reported and we found no additional utility-provided services constituting an internal RCBS per Section 14:4-3.6 of the Standards.

The versions of the Plan in effect during the audit period include the following assertion from management:

> *It is the Company's view that Sections 3.3 through 3.5 of the Standards do not apply to related competitive business segments of Exelon providing services to other utilities or common carriers, providing high voltage or other specialty services or products to a relatively limited number of commercial or industrial customers or providing telecommunications services.*

Management took this same position during our previous EDECA audit of ACE and its parent (at that time Conectiv) some 15 years ago. Our report at that time said:

> *Liberty concurs with the first part of Conectiv's statement, but only when it comes to products and services sold to other utilities and common carriers when those are sales for resale. Liberty does not, however, agree that other sales to utilities or a few commercial and industrial customers are not retail, even if they are specialized. Liberty applies the definition that is standard in the electric and gas utility industries, that only a sale for resale is a wholesale sale. This means, for instance, that providing inputs to a manufacturer is a retail sale. In any case, where the only significant value added by the purchaser is in making the purchased product or service available to a different market, the purchase can be considered wholesale.*

If, however, the purchaser makes a substantial transformation of the nature of the service or product, or if the purchaser bundles it with others in its offering to a different market, then the purchase should be considered retail. For example, selling windshield wipers to an auto parts store would be wholesale, while selling them to an auto manufacturer would be retail.

Liberty recognizes that there are other possible definitions, many of them in fact, but believes that the Standards would become almost trivial if a substantially more restrictive definition of retail were to be adopted. The Standards could, as is the case in some other states, merely have imposed code-of-conduct requirements on affiliates in the energy supply business; however, this is clearly not what has been done in New Jersey. Adopting a definition of "retail" that would exempt nearly all of the activities that affiliates have undertaken or are likely to undertake did not appear to be consistent with the broad thrust of the Standards. At least, Liberty did not feel comfortable adopting on its own initiative such a definition.

3. Conclusions

1. The merger significantly increased the number of ACE affiliates.

2. ACE has a limited number of RCBS affiliates, and their operations focused on a small number of offerings.

The following affiliates of ACE offer services to retail customers in New Jersey. W.A. Chester was sold during the conduct of this audit, leaving the following services offerings and entities active:

- Meter Reading and Billing: Millennium Account Services
- Energy Service Companies: Five entities serving as competitive energy suppliers/providers of energy related services
- Solar Generation Entities considered QFs under PURPA: Three entities
- Real Estate Investment and Management: Atlantic Southern Properties.

3. Management's assertion that entities "providing services to other utilities or common carriers, providing high voltage or other specialty services or products to a relatively limited number of commercial or industrial customers or providing telecommunications services" are not subject to the Standards is overly broad and not consistent with the intent of the Standards. *(Recommendation #1)*

The offering of sales to utilities or a few commercial and industrial customers should be considered retail, even if they are specialized.

4. Previous versions of ACE's Compliance Plan may not have identified all entities that provide service to retail customers in New Jersey. *(Recommendation #1)*

Our review of ACE Compliance Plans from earlier in the audit period identified affiliated entities that provided service to retail customers in New Jersey that were not appropriately considered by management to be an RCBS. The following entities offered services available to ACE's retail customers at some point during the audit period:

- ATS Operating Services, Inc
- Conectiv Thermal Systems, Inc.

While neither of these entities remain as operating affiliates owned by Exelon or PHI, they did for at least a portion of the audit period.

4. *Recommendations*

1. **Treat each affiliate offering services at retail, including those potentially excluded by management's interpretation regarding the provision of services to other utilities, common carriers, specialty services, a relatively limited number of customers, or telecommunications services, as an RCBS.** (*See Conclusion #3 and #4)*

E. General Administration of the Standards

1. *Background*

This section addresses management's administration of compliance the Standards generally. Sound administration requires a formal approach, a focus on training and communication, and the dedication of resources sufficient to assuring a proper environment for assuring compliance with the Standards.

2. *Findings*

A Vice President at the Exelon level has overall responsibility for corporate compliance and ethics, including compliance with the Standards. Various ACE and PHISCo business groups support these efforts. Attorneys prepare the annual ACE Compliance Plans, with input from the business groups affected by specific portions of the Standards. The Cost Allocation Manual (CAM), which serves as a key component of many provisions in the Standards is also managed by a senior officer, the Vice President and Controller of PHI. The CAM, discussed more broadly in Chapter IV, *Cost Allocation Methods*, also gains support from various groups, which include PHISCo accounting and legal resources. That other chapter describes affiliate transaction review by the external auditors, an annual transactions review, CAM attestations, and bi-annual review by Internal Audit.

We reviewed management's planning for and conduct of Internal Audits, which we summarized in Section H of Chapter IX, *Executive Management and Governance*. Internal Audit performs scheduled Cost Allocation Process Reviews every two years, per service agreements requirements. The following such reviews occurred during the EDECA audit period:

- PHI Cost Allocation Audit for audit years 2013 and 2014
- PHI Cost Allocation Process for audit year 2016
- BSC Cost Allocation Review for audit year 2017.

3. *Conclusions*

5. **Management made a sufficiently senior person responsible for the Compliance Plan.**

Exelon has responsibility for overall corporate compliance, with oversight and responsibility provided by its Vice President and Deputy General Counsel, Chief Compliance and Ethics Officer.

6. **Management conducts regular audits of compliance with selected requirements of the Standards, but additional reviews would complement them.** *(See Recommendation #1)*

Management performs appropriate reviews of cost allocations topics, serving to complement the BPU's EDECA audits and varying in scope to address emergent issues. Following up on recommendations made in Chapter IV, *Cost Allocation Methods* will presumably be a part of future internal audits. Other portions of the Standards, such as Information Technology and information access, however, comprise examples of additional areas where internal audits could help ensure management's compliance.

7. **The Compliance Plan does not address the individuals or business groups with specific responsibility for enforcement of each section the Standards.** *(Recommendation #2)*

Management should include in future versions of the Plan a description of which positions or business groups have responsibility for each section of the Standards. As many of the services provided to or for ACE come from non-ACE specific personnel, this will help ensure that all relevant parties are aware of responsibilities and proper coordination occurs.

4. Recommendations

2. **Make additional portions of the Standards subject to Internal Audit review.** *(See Conclusion #6)*

3. **Update the Compliance Plan to include which individuals or departments have responsibility for enforcement of each section of the Standards.** *(See Conclusion #7)*

F. Non-Discrimination Standards (Section 14:4-3.3)

Section 14:4-3.3 of the Standards applies to interactions between a utility and its affiliates, any RCBS of its holding company, or the holding company itself, if it offers or provides competitive services to retail customers in New Jersey. These standards do not apply, however, in cases where an internal RCBS exists within the utility itself, and where there are transactions between the utility and such an RCBS. Separate standards, which Section G of this report addresses, apply to interactions between utilities and their internal RCBSs.

1. Affiliate Preferences

a. <u>Statement of Applicable Requirements</u>

Section 14:4-3.3 of the Standards provides that:

(a) An electric and/or gas public utility shall not un-reasonably discriminate against any competitor in favor of its affiliate(s) or related competitive business segment.

(b) An electric or gas public utility shall not represent that, as a result of the relationship with the electric and/or gas public utility or for any other reason, a related competitive

business segment of its public utility holding company, or customers of a related competitive business segment of its public utility holding company will receive any different treatment by the electric and/or gas public utility than the treatment the electric and/or gas public utility provides to other, unaffiliated companies or their customers.

(c) An electric or gas public utility shall not provide a related competitive business segment of its public utility holding company, or customers of a related competitive business segment of its public utility holding company, any preference (including, but not limited to, terms and conditions, pricing, or timing) over non-affiliated suppliers or their customers in the provision of products and/or services offered by the electric and/or gas public utility.

b. Summary of Audit Activities

This standard set forth in Section 3.3(a) and many of the standards that follow it address the issue of discrimination. Those that follow tend to apply to specifically-designated cases (see for example the requirements of Section 3.3(e), which later sections of this report address), while subsections (b) and (c) set forth two more general rules. Specifically, these two subsections of the Standards prohibit two particular forms of favoritism to affiliates:

- (b) Making representations that any RCBS of its holding company or that any customers of such an RCBS will be treated differently by the utility
- (c) Providing preferences to any RCBS of its holding company or RCBS customers with respect to terms, conditions, pricing, timing, or other aspects of utility services.

Our examination of discrimination under this subsection tested:

- Whether the general paths used for regular customer communications include any direct or implied representations that selection of an RCBS would bring advantage to the customer in terms of utility service
- Whether the utility website makes any direct or implied representations that selection of an RCBS would bring advantage to the customer in terms of utility service
- Whether the utility compliance plan adequately addresses the requirements of this subsection.

We identified what regular channels used to communicate with ACE customers during the audit period, and then gathered documents displaying the substance of those communications in order to examine them for evidence of prohibited discrimination. We also reviewed ACE's Compliance Plan to determine what standards of conduct it imposed with respect to employee representations to customers. We examined the websites of the holding company, utility, and affiliates.

c. Findings

We reviewed the available print and web advertisements used during the audit period. Those that management could produce for our review did not make any prohibited references, recommendations, or suggestions of preference. No affiliate has used television or radio advertisements.

We observed the following from reviewing the web pages of the relevant Exelon and ACE entities. Exelon's webpage can be found at www.exeloncorp.com. A heading for "Company" contains a menu of options for "Our Company," where options include:

- Overview
- Our Generation Fleet
- Exelon Generation
- Constellation
- Atlantic City Electric
- BGE
- ComEd
- Delmarva Power
- PECO
- Pepco.

No links exist to web pages for Atlantic Southern Properties or Millennium Account Services.

Constellation's web page can be found at www.constellation.com. Links take users to the various states where it provides retail service. The Exelon logo is visible, but we observed no suggestion of improper connection to ACE or other operating utilities. Constellation's site includes a disclaimer to inform customers that they do "not have to buy Constellation electricity, natural gas or any other products to receive the same quality regulated service from your local utility." This disclaimer appears at the far bottom of each page of the site. Our review of archived versions of the site found less consistent usage of the disclaimer in earlier years of the audit period. For example, we found no general disclaimer on the homepage prior to December 9, 2015. Our review of pre-2016 versions of the website did find some version of the disclaimer which would have appeared as customers navigated through the site, in their progression to signing up for service.

Atlantic City Electric's webpage can be found at www.atlanticcityelectric.com. No links to webpages or other information about its Retail Affiliates are prominent.

W.A. Chester's website can be found at: www.wachester.com. This entity was sold during the course of audit field work. We reviewed archived versions of the site, and found no use of any disclaimer.

Millennium Account Services website can be found at: http://www.millenniumaccountservices.com. The Millennium Account Services webpage is dated; our review of archived versions of the site suggest little or no changes since 2013. The following disclaimer appears on the home page, but only after scrolling down below the first viewable portion of the site. It makes no mention of Atlantic City Electric (instead referring to a former holding company) or that no relationship is necessary to affect service from ACE:

> *"Created in 1999, Millennium Account Services is a jointly-owned subsidiary of South Jersey Industries and Conectiv Solutions that was created to respond to the evolving deregulation of the energy industry in New Jersey."*

> *"Millennium Account Services is not the same company as South Jersey Gas and you do not have to purchase Millennium Account Services products to receive quality service from South Jersey Gas."*

Atlantic Southern Properties does not have a website.

The Compliance Plan states that it is ACE's and its ultimate parent's policy not to discriminate against any competitor in favor of any Retail Affiliates. The Plan notes that all new hires at ACE or Exelon receive training and corporate communications on its code of Business Conduct, FERC Standards of Conduct, and internal ethics polices. The Code of Business Conduct requires that employees comply with several guidelines surrounding affiliate interaction, including:

- Separating ACE's transmission operations from the activity of any non-utility affiliates
- Forbidding access to non-public information about ACE's market, transmission, or distribution system in any preferential manner
- Ensuring proper allocation, verification, and charging of costs between the utility and affiliates
- Forbidding of preferential treatment regarding customer leads or transmission and distribution system operations to affiliated or non-affiliated competitive energy suppliers
- Requiring utility customer consent before disclosing information to affiliated and non-affiliated third parties
- Providing leads, preferences, or benefits that would construe or suggest a competitive advantage to any operations of an affiliate.

We reviewed the versions of these documents in existence during the audit period to assess whether they contain adequate employee training to support knowledgeable application of the requirements of this subsection of the Standards. Management's comments on a draft of this report observed that, in October 2019, employees of the utilities, including ACE, were required to receive training on affiliate regulations and relationships.

d. Conclusions

8. ACE and its New Jersey retail affiliates did not during the audit period represent in print or television ads or in any other written customer communications that any RCBS or RCBS customers would receive any type of preferential treatment, but not all audit period materials remained in existence. *(See Recommendation #4)*

We reviewed the materials that management was able to provide. Some information from earlier years in the audit period were not available, and not all of the digital files maintained by management could be opened.

9. Exelon, ACE, and affiliates' websites create no affirmative implication of preference, but not all websites set forth an appropriate disclaimer, or do so in a fashion that suggests customers will notice it. *(See Recommendation #5)*

Our review of current and archived versions of the websites noted above indicated that none create any impression of preference. However, the inclusion of a disclaimer regarding the lack of connection between taking service from an RCBS and preference in utility service was not consistently applied.

Constellation's website appropriately includes the disclaimer, but only at the very bottom of each page on the site, meaning that customers who visit the site will likely not note its presence. Earlier versions of its site included a less prominent usage of the disclaimer. Millennium Account Services website indicates that it is a jointly-owned subsidy of Conectiv Solutions, which is the former name of its sub-holding company before the Exelon merger. The disclaimer used references only South Jersey Gas, and makes no mention of Atlantic City Electric. W.A. Chester's website contained no disclaimer; while it is no longer a Retail Affiliate of ACE, it was for the audit period we examined, and thus the disclaimer should have been present on its website.

10. ACE's Compliance Plan adequately addresses this section of the Standards.

11. Our review of customer communications disclosed no preferential treatment by ACE in favor of any PUHC RCBS or customers of any PUHC RCBS.

e. Recommendations

4. Ensure that all customer communications, including print, radio, television, and web advertisements are maintained sufficiently to support reviews of compliance with the Standards. *(See Conclusion #8)*

Management was not able to provide all such materials for each year of the Audit Period. Retaining this information in its entirety, and doing so in a way that permits review for compliance with the Standards should be the goal.

5. Ensure that website disclaimers regarding the taking of service from an affiliate are included on each Retail Affiliate's site, and are presented in a way that will help ensure that customers will notice. *(See Conclusion #9)*

The remaining services provided by ACE's retail affiliates suggest that nearly all of its retail customers potential interactions with them would be limited to the retail energy offerings of the various Constellation entities. ACE's website makes no suggestion or provides links to Constellation, but as customers can access the site though Exelon Corp's site, ACE's parent, the disclaimer is important. Exelon does include the disclaimer here, but it should make it more prominent.

Management should also update the Millennium Account Services site to include reference to its connection to ACE. While W.A. Chester is no longer an affiliate, and its services were certainly not as prone to ACE retail customer interaction as a retail energy affiliate, or an appliance service business (as some utilities in New Jersey offer), a disclaimer nevertheless should be included on all current and future websites for all affiliates that provide service to customers in New Jersey.

2. Prohibited Transactions

a. Statement of Applicable Requirements

Section 14:4-3.3(d) of the Standards provides that:

> *Transactions between an electric and/or gas public utility and a related competitive business segment of its public utility holding company shall be prohibited, except for the following…*

Subsection (d) then goes on to list the following exceptions to the prohibition on transactions:

- Tariffed products or services
- Sales and purchases made generally available to all market participants through open and competitive bidding
- Joint purchases allowed by Sections 14:4-3.5(g) and (h)
- "Shared corporate support functions" allowed by Sections 14:4-3.5(i) and (j), which extend to the sharing of "joint corporate oversight, governance, support systems and personnel"
- Competitive products or services offered by an RCBS within the utility, as allowed by Sections 14:4-3.6(a) through (f).

The Standards do not include a "corporate support" among its defined terms, but do define two related terms:

- "Services that may not be shared" means those services which involve merchant functions**,** including, by way of example: hedging and financial derivatives and arbitrage services, gas and/or electric purchasing for resale, purchasing of gas transportation and storage capacity, purchasing of electric transmission, system operations, and marketing.
- "Shared services" means administrative and support services that do not involve merchant functions, including by way of example: payroll, taxes, shareholder services, insurance, financial reporting, financial planning and analysis, corporate accounting, corporate security, human resources (compensation, benefits, employment policies), employee records, regulatory affairs, lobbying, legal, and pension management.

b. <u>Summary of Audit Activities</u>

The effect of this section is to prohibit a utility and an RCBS of its holding company from engaging in any form of transaction not specifically authorized by the Standards. The first, second, and fifth exceptions have in common the fact that transactions generally available to all comers, whether affiliated or not, are acceptable to the extent that they are governed by standard or uniform prices, terms, and conditions. The third and fourth exceptions recognize the right to use internal economies of scale or scope to provide an affiliate with services that are not made available to outsiders. Our examination of this standard focused on whether non-tariffed transactions (except for permitted common services for purchasing and corporate support) were made available to all market participants. Pricing questions were not examined here, but under Sections 3.3(f) through (i), which cover discounts, charge waivers, and strict tariff enforcement in transactions between the utility and a holding company RCBS. Therefore, the criterion that we applied here was:

- Whether the utility made available to a holding company RCBS opportunities to purchase or sell goods or services (apart from the allowed common purchasing and support service) not also made available to other market participants.

We sought to identify the flow of goods and services between the utility and its affiliates, much of which we did in the performance of our work summarized in Chapter IV, *Cost Allocation Methods*. As part of this work, we examined the transaction information provided by the utility for compliance with this criterion, and supplemented these efforts by questioning the utility as to its involvement in any audit period transactions other than those allowed.

c. Findings

During interviews and document reviews, we obtained information about many transactions between ACE and affiliates. We performed much of this work as part of efforts in addressing *Cost Allocation Methods*, which we described in Chapter IV of this report. We examined whether those transactions violated the requirements of this section of the Standards. The Compliance Plan summarizes this section of the Standards, and notes overall compliance with them. The Plan summarizes instruction given to ACE employees regarding these requirements.

d. Conclusions

12. The Compliance Plan adequately addresses this section of the Standards.

13. We found no prohibited non-compliant transactions between ACE and RCBSs during the audit period, but contracts with two affiliates warrant monitoring.

See Recommendation #12 and #13 later in this chapter.

e. Recommendations

We have no recommendations with respect to this portion of the Standards, outside of those put forward in Recommendation #11 and #12 from this chapter.

3. Access to Information and Services

a. Statement of Applicable Requirements

Section 14:4-3.3(e) of the Standards provides that:

> *An electric and/or gas public utility shall provide access to utility information, services, and unused capacity or supply on a non-discriminatory basis to all market participants, including affiliated and non-affiliated companies…*

b. Summary of Audit Activities

This section's anti-discrimination provisions generally are the same as those set forth in Section 14:4-3.3(a). What makes it particularly different is the imposition of the following requirement regarding public posting of offerings made by the utility:

> 1. *If an electric and/or gas public utility provides supply, capacity, services, or information to a related competitive business segment of its public utility holding company, it shall make the offering available, via a public posting, on a non-discriminatory basis to non-affiliated market participants, which include competitors serving the same market as the related competitive business segment of the electric and/or gas public utility's holding company.*

This standard, unlike the one set forth in preceding subsection (a), introduces the concept of utility provision of "information" as a possible source of preference or discrimination. This audit's examination of utility performance in making information available is addressed in other sections of this report, *e.g.*, 3.3(m), 3.4(a), 3.4(b), 3.4(d), 3.4(e), 3.5(e), 3.5(j), 3.5(s), which address the sharing of information among affiliates.

Given the relationship of this subsection with the preceding one, we carried out its audit work on the two provisions together. The work relevant here, which the previous section of this report discusses in detail, addressed whether ACE made a public posting of all offerings of services (if any) that it made available to a holding company RCBS.

c. <u>Findings</u>

Our findings for this provision are subsumed in the conclusions set forth for Section 14:4-3.3(b), (d), and (e) in the report sections that immediately precede and follow this one.

d. <u>Conclusions</u>

Our conclusions for this provision are subsumed in the conclusions set forth for Section 14:4-3.3(b), a discussion of which we provide in the report section immediately preceding this one.

e. <u>Recommendations</u>

We have no recommendations regarding the requirements of this provision, apart from the relevant ones set forth in the recommendations for Section 14:4-3.3(b), a discussion of which we provide in the report section immediately preceding this one.

4. Short-Term and Long-Term Sales of Surplus Energy or Capacity

a. <u>Statement of Applicable Requirements</u>

Section 14:4-3.3(f) of the Standards provides that:

> *An electric and/or gas public utility selling or making an offer to sell surplus energy, kWh and/or Dth, respectively, and/or capacity, kW or therms, respectively, on a short term basis to its PUHC or a related competitive business segment of its public utility holding company, shall make the offering available on a non-discriminatory basis to non-affiliated electric or gas marketers, via a public posting.*

Section 14:4-3.3(g) of the Standards provides that:

> *An electric and/or gas public utility selling or making an offer to sell surplus energy, kWh, and/or Dth, respectively, and/or capacity, kW or therms, respectively, on a long term basis to its PUHC or a related competitive business segment of its public utility holding company, shall make the offering available on a non-discriminatory basis to non-affiliated electric or gas marketers, via a public posting.*

b. <u>Summary of Audit Activities</u>

These portions of the Standards set forth requirements that a utility that offers to sell surplus energy or capacity to its PUHC or an RCBS of its PUHC on a short-term basis (transactions of 31 days or less), must make the offering available to non-affiliated companies via a public posting. Because the requirements for short- and long-term sales are similar, we examined both types through the same audit activities. We first sought information from ACE about its selling of excess energy and capacity on both a short-term and long-term basis. We also reviewed the Compliance Plan, specifically any portions dealing with surplus energy and capacity. Our work examined whether:

- The Compliance Plan adequately addresses the requirements applicable to offerings made to an RCBS
- ACE made a public posting of all offerings (if any) made available to a holding company RCBS.

c. Findings

ACE's Compliance Plan states its responsibilities under the Standards, and notes the website where any public postings would be made. ACE's website includes an area where postings of offerings of surplus energy to its affiliates can be posted. This page is also accessible via the "Public Postings" link on ACE's homepage. There were no such transactions between ACE and its retail energy affiliates during the audit period, thus no postings were made. We conducted detailed examinations of capacity and supply transactions between ACE and its affiliates. This report's chapter on *Power Supply and Market Conditions* (Chapter III) describes in more detailed work surrounding these broader and issues surrounding ACE's purchases and sales of electricity.

d. Conclusions

14. The Compliance Plan adequately addresses this section of the Standards.

15. ACE has retail energy affiliates, but made no audit period transactions with any of them.

16. ACE did not engage in any transactions that required posting.

ACE's website has a section available for such postings in the event that they may occur.

e. Recommendations

We have no recommendations with respect to this provision of the Standards.

5. Discounts or Waivers of Fees or Charges

a. Statement of Applicable Requirements

Section 14:4-3.3(h) of the Standards provides that:

> *Except when made generally available by an electric and/or gas public utility through an open, competitive bidding process, an electric and/or gas public utility shall not offer a discount or waive all or part of any other charge or fee to a related competitive business segment of its public utility holding company, PUHC, or offer a discount or waiver for a transaction in which a related competitive business segment of its public utility holding company is involved unless the electric and/or gas public utility shall make such discount or waiver available on a non-discriminatory basis to other market participants.*
>
> *1. An electric and/or gas public utility shall not give its PUHC or a related competitive business segment of its public utility holding company involved in energy supply or marketing a preference with respect to tariff provisions that provide for discretionary*

waivers of fees, penalties, etc., unless offered to all others on a non-discriminatory basis.

b. Summary of Audit Activities

This section prohibits a utility from offering a discount or waiver of any charge to or for the benefit of an RCBS of its holding company, unless it makes the same concessions to non-affiliates. We first sought to identify any instances during the audit period when ACE may have offered a discount or waiver to an RCBS. In the event that there were any, we then determined whether the utility made the same concessions available to non-affiliates through an open process. As a first step, we formally asked whether the utility provided any discounts, waivers, or the like to its holding company or to an RCBS of its holding company during the audit period.

During interviews and document reviews addressing transactions among affiliates, we also obtained substantial information about transactions between the utility and its affiliates. We examined that information for evidence of any discount, waiver, rebate, etc. to an affiliate. In the event that any discounts or waivers were found, we then intended to examine whether they were similarly offered to non-affiliates.

Our focus here was to determine whether:

- the Compliance Plan adequately addresses obligations under this standard
- In the event that there were any covered transactions, similar offerings were made to non-affiliates.

c. Findings

The Compliance Plan restates this section, and notes that ACE policy precludes offering discounts or discretionary waivers to any retail affiliates. ACE provided tariffed electric services to four affiliates during the audit period: PHISCo (its service company), Atlantic Southern Properties, Thermal Energy Limited Partnership I, and Millennium Account Services. No waivers or discounts were provided.

d. Conclusions

17. ACE offered no discounts or waivers to tariffed services provided to affiliates.

18. The Compliance Plan adequately addresses this section of the Standards.

The Plan states management's understanding of the prohibitions regarding its offering of discounts or discretionary waivers to any retail affiliates, absent the defined exceptions prescribed by the Standards.

e. Recommendations

We have no recommendations regarding the requirements of this provision.

6. Documentation of Discount Bases

a. Statement of Applicable Requirements

Section 14:4-3.3(i) of the Standards provides that:

> *An electric and/or gas public utility shall document the cost differential underlying the discount to its PUHC or a related competitive business segment of its public utility holding company in the Affiliate Discount Report described in (q) through (s) below.*

b. Summary of Audit Activities

This section requires that ACE document the basis for any discount offered to the holding company or an RCBS of its holding company. We first sought to determine those instances during the audit period when ACE may have offered a discount or waiver to its holding company or to an RCBS of a holding company. In the event that there were any, we then intended to determine whether the company properly documented the basis for any discount offered to the RCBS.

c. Findings

As discussed with respect to Section 14:4-3.3(h), ACE did not offer discounts or waivers to RCBSs of its holding company. Therefore, documentation of such discounts was not required. The Compliance Plan restates this section of the Standards and confirms ACE's understanding that the cost differential of any such offering to an affiliated entity must be documented accordingly.

d. Conclusions

19. ACE offered no discounts or waivers to tariffed services provided to affiliates.

20. The Compliance Plan adequately addresses this section of the Standards.

The Plan states ACE's understanding of its need to document any costs differential that occurs when a discount is offered to a Retail Affiliate.

e. Recommendations

We have no recommendations regarding the requirements of this provision.

7. Non-Discriminatory Tariff Enforcement

a. Statement of Applicable Requirements

Section 14:4-3.3(j) of the Standards provides that:

> *An electric and/or gas public utility shall apply tariff provision(s) on a non-discriminatory basis to its PUHC or related competitive business segments of its public utility holding company and to other market participants and their respective customers if the tariff provision allows for discretion in its application.*

b. Summary of Audit Activities

These provisions prohibit a public utility from discriminating in favor of its holding company or an RCBS of its holding company in the following two ways:

- Failing to enforce tariff requirements fully
- Giving an affiliate relatively greater benefit where a tariff may allow the exercise of latitude.

As a threshold matter, we sought to determine the full extent of tariff services provided by ACE to affiliates during the audit period. We would use this information to determine whether the utility had engaged in any activity covered by the requirements imposed by this section of the Standards. We would then identify and carry out any test activities considered appropriate in testing compliance with those requirements. Our focus was on determining whether:

- The Compliance Plan adequately addresses its obligations under this standard
- In the event that there were any covered transactions, similar offerings were made to non-affiliates.

c. Findings

Section F of this report describing Section 14:4-3.3(h) of the Standards summarizes ACE's audit period provision of tariffed services to affiliates, and that each such provision was provided without amending tariff provisions. ACE also highlighted its and its holding company's prohibition against discriminating against others in these regards which they outline in the Compliance Plan. We discuss this matter under the treatment of Section 14:4-3.3(i) above. We note though that unlike each other individual sub-section, Section 14:4-3.3(j) of the Standards are not addressed directly in the Compliance Plan. However, this sub-section of the Standards bears sufficient enough similarity to alleviate significant concern regarding this omission.

d. Conclusions

21. We found no evidence of discriminatory application by ACE in applying tariffs to affiliates.

22. The Compliance Plan does not directly address Section 14:4-3.3(j) of the Standards. *(See Recommendation #6)*

Section 14:4-3.3(j) of the Standards is not addressed directly in the Compliance Plan, making this section an outlier in that regard as all others do receive specific mention, even those that (like14:4-3.3(j)) have one or more other requirements that are quite similar. While this similarity alleviates significant concern regarding this omission, this section should be treated in the same manner as others. Management's comments on a draft of this report noted that the most recent version of the Compliance Plan, produced after this audit's field work and Audit Period, now covers this portion of the Standards.

e. Recommendations

6. The Compliance Plan should explicitly address Section 14:4-3.3(j) of the Standards. *(See Conclusion #22)*

Specific mention of Section 14:4-3.3(j) of the Standards will help ensure no omission of these matters occur, and confirm completely that this section obtains the same level of attention as others. Management reports that the versions of its Compliance Plan will now address this issue.

8. *Strict Tariff Enforcement*

a. Statement of Applicable Requirements

Section 14:4-3.3(k) of the Standards provides that:

An electric and/or gas public utility shall strictly enforce a tariff provision if the tariff provision does not allow discretion in its application.

b. Summary of Audit Activities

This provision corresponds to the previous standard set forth in Section 14:4-3.3(h). The difference is that the previous standard applies to enforcement of tariff provisions that allow the utility to exercise discretion, while this one applies to the enforcement of tariff provisions whose implementation does not allow utility discretion. Given the similarity in requirements, Our audit activities and evaluation criteria were the same as those set forth for Section 14:4-3.3(h).

c. Findings

The Compliance Plan states ACE's understanding of its requirements to apply its tariff provisions to all market participants on a non-discriminatory basis. As we have noted, ACE provided no waivers or discounts to affiliates for tariffed services during the audit period.

d. Conclusions

23. We found no evidence that ACE failed to enforce tariff requirements with respect to affiliates.

e. Recommendations

We have no recommendations regarding the requirements of this provision.

9. *Processing Affiliate Service Requests*

a. Statement of Applicable Requirements

Section 14:4-3.3(l) of the Standards provides that:

An electric and/or gas public utility shall process all requests for similar services provided by the electric and/or gas public utility on a non-discriminatory basis for its PUHC or a related competitive business segment of its public utility holding company and for all other market participants and their respective customers.

b. Summary of Audit Activities

These provisions prohibit a public utility from discriminating in favor of its holding company by giving affiliates faster, cheaper, or technically superior service when they request new service, changes in existing service, or eliminations of current service. As a baseline matter, we sought to identify all service requests from affiliates during the audit period. we would use this information to determine whether the utility engaged in any activity covered by the requirements imposed by this section of the Standards. We would then identify and carry out any test activities considered appropriate in determining compliance with those requirements. Our focus was on determine whether:

- The Compliance Plan adequately addresses its obligations under this section of the standards
- Whether there is any evidence that ACE offered its holding company or any holding company RCBS a preference in responding to service requests.

c. Findings

The Compliance Plan recites this provision of the standards, and notes that the only services provided at retail by ACE are its tariffed offerings. We asked ACE for a list of each request for new or changed services received from an RCBS during the audit period. Management reported that it was unaware of any occurrences of such requests. The services ACE provided to such entities did not change during the audit period.

d. Conclusions

24. We found no audit-period occasion that would create the potential for a violation of this section of the Standards.

25. The Compliance Plan adequately addresses this section of the Standards.

The Plan states that all requests for similar services from an affiliate or any other market participant will be provided by ACE on a non-discriminatory basis.

e. Recommendations

We have no recommendations regarding this section of the Standards.

10. Tying Arrangements

a. Statement of Applicable Requirements

Section 14:4-3.3(m) of the Standards provides that:

> *An electric and/or gas public utility shall not condition or otherwise tie the provision of any products and/or services provided by the electric and/or gas public utility, nor the availability of discounts of rates or other charges or fees, rebates, or waivers of terms and conditions of any products and/or services provided by the electric and/or gas public utility to the taking of any products and/or services from its PUHC or a related competitive business segment of its public utility holding company.*

b. Summary of Audit Activities

This section prohibits the utility from tying the provision of goods or services, discounts, rebates or waivers to the taking of products or services from its PUHC RCBS. Our work here focused on verifying that:

- Regular customer communications did not directly or indirectly indicate that the availability of or the conditions associated with taking any utility service have any connection to the taking of service from an affiliate.

- The Compliance Plan offer employees explicit instructions with respect to avoiding direct or implied statements that tying is necessary for securing utility services or advantageous with respect to the terms and conditions applicable to utility service.

We reviewed utility customer communications, including information provided to customers inquiring about Energy Choice, utility bill inserts, advertising, and the website for any representation or implication with respect to tying the taking of goods or services from a PUHC RCBS to the provision of utility services. We also reviewed the Compliance Plan to ensure that the action of tying utility products or services to the taking of products or services from an affiliate is specifically prohibited.

c. Findings

As noted above regarding Section 14:4-3.3(a) of the Standards, we found that ACE does not represent in its customer communications (including the Energy Choice, bill insert, web and advertising material we reviewed) any implication of preferential treatment for any PUHC RCBS or the customers of any PUHC RCBS. These conclusions also apply to any conditions or tying of the provision of utility services or discounts to the taking of any products from a PUHC RCBS. The Compliance Plan recites this provision of the standards, and includes that ACE is forbidden from providing any products or services and the availability of any discounts, rebate or waivers will not be tied to the receipt of products or services from any retail affiliate.

d. Conclusions

26. ACE does not specify or imply in its customer communication the tying of the provision of utility goods and services to the taking of products and services from its PUHC RCBS.

27. Neither ACE nor any of its affiliates' websites specified or implied the tying of the provision of utility products and services to the taking of goods and services from its PUHC RCBS.

28. We found no evidence of the tying of the provision of utility products and services to the taking of goods and services from its PUHC RCBS.

29. ACE's Compliance Plan treats this provision adequately.

e. Recommendations

We have no recommendations regarding the requirements of this provision.

11. Customer Assignments

a. Statement of Applicable Requirements

Section 14:4-3.3(n) of the Standards provides that:

> *An electric and/or gas public utility shall not assign customers to which it currently provides products and/or services to any related competitive business segments of its public utility holding company, whether by default, direct assignment, option or by any*

other means, unless that means is equally available to all competitors on a non-discriminatory basis.

b. Summary of Audit Activities

This provision prohibits a public utility from discriminating in favor of RCBSs of its holding company when assigning customers. We focused on the following in examining implementation of this provision:

- Adequate Compliance Plan information to employees about their obligations under this section
- In the event that any customer assignments took place during the audit period, there should be clear and convincing evidence that there was no discrimination against competitors in making such assignments.

We reviewed the Compliance Plans in effect during the audit period and sought to identify all cases where the utility may have assigned customers to any party, affiliated or not. We would use this information to determine whether the utility engaged in any activity covered by the requirements imposed by this section of the Standards. We would then identify and carry out any test activities considered appropriate in examining testing compliance with those requirements.

c. Findings

ACE reported that it had no knowledge or information that any assignments of customers to any party took place during the audit period. The Compliance Plan recites this provision of the Standards, and cites the compliance training provided employees of ACE, EBSCo, PHISCo, and retail affiliates described in section A. *Affiliate Transactions* of this chapter.

d. Conclusions

30. During the audit period, ACE engaged in no activity concerning which the requirements of Standards Section 14:4-3.3(n) would apply.

31. The Compliance Plan adequately addresses this section of the Standards.

The Plan states that ACE will not assign current utility customers to a retail affiliate unless such assignment is made available to all competitors on a non-discriminatory basis. We found no evidence of any customer assignment by ACE to an affiliate during the audit period.

e. Recommendations

We have no recommendations regarding this section of the standards.

12. Customer Enrollment, Marketing, and Business Development

a. Statement of Applicable Requirements

Section 14:4-3.3(o) of the Standards provides that:

Except as otherwise provided by these standards, an electric and/or gas public utility shall not provide any assistance, aid or services to its PUHC or related competitive business *segment of the PUHC if related to customer enrollment, marketing, or business development unless offered to all competitors on a non-discriminatory basis.*

b. Summary of Audit Activities

The section lists the following examples of assistance to the PUHC or to an RCBS of the PUHC

- Providing leads
- Soliciting business
- Acquiring information on behalf of the PUHC or an RCBS of the PUHC
- Sharing market analysis reports or other types of proprietary reports
- Sharing customer usage or end-use equipment information
- Requesting authorization from its customer to pass on customer information exclusively
- Representing or implying that the utility speaks on behalf of the RCBS or that the customer will receive preferential treatment as a consequence of conducting business with the RCBS
- Representing or implying that the RCBS speaks on behalf of the public utility.

These provisions prohibit a public utility from assisting its holding company or the RCBSs of its holding company in customer enrollment, marketing, and business development. We reviewed the Compliance Plan for adherence to these provisions. In addition, we reviewed business plans, training for customer-service representatives, information recipients, marketing materials, bill inserts, customer and competitor complaints, and information acquisition and dissemination. This review was to ensure that the utility was not participating in any prohibited activity involving its holding company or holding company RCBSs.

We sought to determine whether:

- The Compliance Plan adequately addresses the requirements of this provision of the Standards
- There exist controls adequate for assuring compliance with the requirements of this provision
- ACE scrupulously avoided conduct that provides assistance, support, or services that aid RCBSs, unless offered to other market participants.

c. Findings

We reviewed the ACE Compliance Plan. The plan summarizes management's interpretation of this provision and includes its position that it "has not and will not" provide such assistance to affiliates without making it available to "all competitors on a non-discriminatory basis". The Exelon Code of Conduct includes the following mentions of its requirements concerning affiliate interactions:

Never give preferential treatment regarding utility customer leads or transmission and distribution systems to any seller of electric energy, natural gas or energy services, whether an affiliate or competitor

Never provide leads, preferences or similar benefits designed to provide a competitive advantage from the utility to any competitive business segment of the utility or to any affiliate.

As summarized in Chapter V, *Capital Allocation* and Chapter XII, *Strategic Planning*, we reviewed the relevant ACE, PHI, and Exelon strategic and business plans for adherence to these provisions, and found that the plans complied with this provision of the Standards. We also reviewed the information provided during the planning process to ensure that competitively sensitive information such as market analysis, customer usage information, and end use information are not inappropriately shared.

ACE does not provide customer information unless requested by the customer. We also found that, during the period of the audit period, ACE has not had a competitor or consumer complaint concerning the improper release of information.

d. Conclusions

32. The Compliance Plan adequately addresses this section of the Standards.

The Plan forbids ACE from providing any assistance to a retail affiliate that relates to customer enrollment, marketing or business development, unless such assistance is provided to all competitors on a non-discriminatory basis.

33. The planning processes of ACE and the RCBSs of its holding company are reasonably distinct and separate.

We found no indication that the planning processes serve as a conduit for the sharing of information that this provision of the Standards addresses.

e. Recommendations

We have no recommendations relating to this section of the Standards.

13. Customer Advice or Assistance

a. Statement of Applicable Requirements

Section 14:4-3.3(p) of the Standards provides that:

> *Provided it is in compliance with these standards, and subject to the provisions of N.J.A.C. 14:4-3.4(g), an electric and/or gas public utility may offer or provide customers advice or assistance with regard to a related competitive business segment of its public utility holding company and/or other product and/or service providers upon the unsolicited request of the customer, so long as such advice or assistance is provided with regard to other competitors on a non-discriminatory basis.*

b. Summary of Audit Activities

These provisions assure equal treatment of all providers of goods and services offered by an RCBS of the PUHC, and that the public is made aware of the existence of alternative suppliers of utility-related products and services or of products and services of any related competitive business segment of its holding company. We sought to verify the following:

- Regular customer communications do not offer advice or assistance about any RCBS of its holding company
- The Compliance Plan offers employees explicit instructions that: (a) limit them to providing such advice or assistance to cases where it is solicited by customers, and (b) instruct them that such advice must be provided with regard to other competitors on a non-discriminatory basis.

We reviewed the utility's website, materials that it provides in response to customer inquiries about Energy Choice, and the Compliance Plan with regard to this portion of the Standards.

c. Findings

Our review of customer call center interactions, summarized in Chapter XV, found no instances of advice or assistance being offered regarding customer inquiries. The ACE website page regarding Energy Choice and third-party suppliers is found at the following link:
https://www.atlanticcityelectric.com/MyAccount/MyService/Pages/EnergySupplyOptions.aspx.

This link directs customers who seek to inquire about available alternative providers to a BPU-sponsored page where such information is maintained: https://nj.gov/njpowerswitch/. ACE's site does not highlight or otherwise suggest any affiliated provider or any other supplier. We also reviewed the training materials for Supplier Choice related questions that management provided to call center representatives. These materials define and describe key terminology associated with Retail Choice programs, summarize components of these programs in the various PHI jurisdictions, and include appropriate guidance to representatives regarding prohibitions against volunteering any competitive suppliers' affiliation with the PHI utilities and against offering opinions about any individual suppliers.

Additional findings associated with other portions of the Standards that are related to these provisions can be found in:

- Section D.1 adressing14:4-3.3(a) through (c)
- Section D.10 addressing 14:4-3.3(m).

The Plan summarizes this section of the Standards, and notes the guidelines in place and training for employees surrounding complying with the rules regarding non-discriminatory customer communications.

d. Conclusions

34. The Compliance Plan adequately addresses this section of the Standards.

35. Regular communications do not offer advice or assistance relating to an RCBS of ACE.

e. Recommendations

We have no recommendations with respect to this provision of the Standards.

14. Posting Discounts, Rebates, and Waivers

a. Statement of Applicable Requirements

Section 14:4-3.3(q) of the Standards provides that:

> *If a discount, rebate, or other waiver of any charge, penalty, or fee associated with products and/or services provided by an electric and/or gas public utility is offered to its PUHC or a related competitive business segment of its public utility holding company, the electric and/or gas public utility shall provide the following information within 24 hours of the time of the transaction, via a public posting:*
>
> 1. *The name of its PUHC or related competitive business segment of its public utility holding company involved in the transaction;*
> 2. *The rate charged;*
> 3. *The maximum rate;*
> 4. *The time period for which the discount, rebate, or waiver applies;*
> 5. *The quantities involved in the transaction;*
> 6. *The delivery points involved in the transaction;*
> 7. *Any conditions or requirements applicable to the discount, rebate or waiver, and a documentation of the cost differential underlying the discount as required in (d) or (e) above; and*
> 8. *Procedures by which a non-affiliated entity may request a comparable offer.*

b. Summary of Audit Activities

These provisions ensure that the details of any discount, rebate, or other waiver of any charge provided by a utility to RCBSs of its PUHC are made available by a public posting to non-affiliated entities. The posting must include information on how a non-affiliate can request a comparable offer. We sought to determine:

- Whether the Compliance Plan offers employees explicit instructions that address compliance with this provision
- Any discounts, rebates, or waivers offered were posted as required.

We asked for information about any discounts, rebates or waivers offered by the utility. We requested copies of any posting required to comply with this section, and also searched the company's website for any relevant postings.

We also reviewed the utility compliance plan to examine the company's intended method of complying with this section of the Standards.

c. Findings

Management indicated that it did not offer any form of fee waivers or discounts from ACE to any affiliate during the audit period. The Compliance Plan recites this section of the Standards.

d. Conclusions

36. ACE did not offer a discount or waiver to any affiliate during the audit period to which Section 14:4-3.3(q) would apply.

37. The Compliance Plan adequately addresses this section of the Standards.

e. Recommendations

We have no recommendations relating to this section of the Standards.

15. Information Retention for Discounts, Rebates, and Waivers

a. Statement of Applicable Requirements

Section 14:4-3.3(r) of the Standards provides that:

> *An electric and/or gas public utility that provides its PUHC or a related competitive business segment of its public utility holding company a discounted rate, rebate, or other waiver of a charge, penalty or fee associated with services offered by the electric and/or gas public utility shall maintain, in compliance with N.J.A.C. 14:4-5.2 or longer if required by another government agency, for each billing period, the following information:*

The standard goes on to recite seven categories of information that must be retained.

b. Summary of Audit Activities

These provisions ensure that the utility maintain adequate documentation regarding details of any discount, rebate, or other waiver of any charge provided by a utility to its PUHC or to RCBSs of its PUHC.

Our criteria and audit activities were the same as those set forth for Section 14:4-3.3(p).

c. Findings

Our findings are the same as those set forth for Section 14:4-3.3(p).

d. Conclusions

Our conclusions are the same as those set forth for Section 14:4-3.3(p).

e. Recommendations

Our recommendation is the same as that set forth for Section 14:4-3.3(p).

16. Compliance with FERC Record Keeping Requirements

a. Statement of Applicable Requirements

Section 14:4-3.3(s) of the Standards provides that:

> *All records maintained pursuant to the standards in (o) and (p) above shall also conform to FERC rules where applicable.*

b. Summary of Audit Activities

This provision requires that records maintained regarding discounts, waivers and rebates offered by a utility to its PUHC or to an RCBS of its RCBS conform to FERC rules. Our audit activities were the same as those set forth for Section 14:4-3.3(o).

c. Findings

ACE has offered no discounts, rebates, or waivers to any customers, including its PUHC and RCBSs of its PUHC, during the audit period. Therefore Section 14:4 3.3(q) is not applicable. We reviewed the ACE Compliance Plan and found no reference to this section of the Standards. The Plan confirms ACE's past compliance with this portion of the Standards (as well as those in Sections 14:4-3.3(q) and (r), and cites the provision of training to employees of the utility, service companies, and retail affiliates it provides to ensure employees adhere to them.

d. Conclusions

38. ACE did not offer a discount or waiver to any RCBS of the holding company during the audit period to which Section 14:4-3.3(s) would apply.

39. The Compliance Plan adequately addresses this section of the Standards.

e. Recommendations

We have no recommendations relating to this section of the Standards.

G. Information Disclosure Standards (Section 14:4-3.4)

Section 14:4-3.4 of the Standards applies to interactions between a utility and an RCBS of its holding company or the holding company itself if it offers or provides competitive services to retail customers in New Jersey. These standards do not apply, however, in cases where an internal RCBS exists within the utility itself and where there are transactions between the utility and such an RCBS. Separate standards, which Section D of this report addresses, apply to interactions between utilities and their internal RCBSs.

1. Providing Customer Proprietary Information

a. Statement of Applicable Requirements

Section 14:4-3.4(a) of the Standards provides that:

> *An electric and/or gas utility may provide individual proprietary information to its PUHC or a related competitive business segment of its public holding company only with the prior affirmative customer written consent or as otherwise authorized by the Board and only if it is provided to unaffiliated entities on a non-discriminatory basis with prior affirmative customer written consent, or as otherwise authorized by the Board.*

b. Summary of Audit Activities

These provisions provide protection to customers and competitors by preventing affiliate exploitation of information and data generated by the public utility. The holding company and its RCBSs could gain competitive advantage by:

- Inappropriately sharing customer specific information
- Using information gained through the operation of the utility system to gain competitive advantage in identifying market opportunities or problems

- Using non-public information provided to the public utility by unaffiliated suppliers to gain competitive advantage
- Inappropriately using or exclusively exchanging proprietary data to preclude unaffiliated suppliers from obtaining information available to the PUHC and its related competitive business segment.

We focused on the following aspect of administering this provision:
- ACE should have adequate methods for controlling the release of customer information in accord with the standard
- The Compliance Plan should adequately address employee obligations under this standard.

In its initial review of customer proprietary information, we sought to determine if ACE released customer proprietary information to either a holding company or RCBS during the audit period. We then sought to determine if all customer-proprietary information releases that did occur came after proper customer authorization or other approval by the BPU. We also requested information regarding any formal or informal complaints concerning the use or release of customer proprietary information that occurred during the audit period.

We also reviewed utility customer-service processes to ensure that adequate methods existed to control access and protect customer proprietary information from inappropriate disclosure or access. In particular, we reviewed training material for customer service personnel, along with controls on access to customer information; field work associated with these reviews was performed in conjunction with the summaries provided in Chapters XV, *Customer Service* and XXI, *Support Services*.

c. Findings

The Compliance Plan includes ACE's interpretation of this provision of the Standards, and a statement asserting that it has and will continue to act in compliance with them, citing the compliance training provided to utility, service company, and retail affiliate employees as a primary means of ensuring appropriate handling of customer proprietary information. Sections E.1, E.2, and F.5. of this report discuss controls that ACE applies to requests by affiliates for access to customer information databases. The Plan further notes that the provision of any such data will be made under the same terms and conditions, regardless of whether the entity requesting the information is an affiliate or not. As the current Standards do not include a definition of "customer information" that is distinct from "customer proprietary information," ACE's Plan includes a definition of the former consistent with the original version of the Standards: "information data regarding a utility customer which [the Company] learned, acquired or developed while in the business of providing electric…public utility services."

Management classifies customer proprietary information pursuant to the definition of "individual proprietary information" provided for in the Standards: "… a customer's name, address, telephone number, energy usage and payment history and such other information as the Board, by order, may determine." Management reported that during the audit period its only provision of customer information to its non-utility affiliates were the "Active Customer List" and customer historical usage information, which it provided upon the request of its third party energy suppliers.

Management provides both sets of information to registered third-party energy suppliers upon request, noting that ACE enters into a Master Service Agreement with each such entity that requires the receipt of customer authorization prior to submitting to ACE a request for its provision. Management reported no unauthorized releases of customer proprietary information during the audit period.

ACE also described the release of non-proprietary customer information to certain of its RCBSs concerning contracts in place between ACE and such entities during the audit period. This list included:

- Atlantic Southern Properties
- Millennium Account Services
- W.A. Chester LLC.

Several Exelon-level documents provide guidance describing the appropriate method for protecting and, when permissible, providing customer information to other parties.

- The Federal Energy Regulatory Commission (FERC) Standards of Conduct, which outline requirements regarding the separation of information and access sharing between public utilities that own or operate control facilities utilized in electric power transmission and affiliates engaging in marketing auctions (18 C.F.R. Part 358)
- The Exelon Corporation Code of Business Conduct, which in several areas address items relevant to the Standards, including its mention of customer information:

    Do not provide utility customer information to third parties, including affiliates, unless we have the written consent of the customer

The Affiliates Standards training that employees receive includes discussions of confidential information. Management reports that all Exelon employees undergo "annual Code of Business Conduct Training," the current version of which includes modules covering items mentioned in the Standards: (1) "Ensuring Appropriate Affiliate Interactions" and (2) "Creating, Maintaining and Disclosing Accurate Books and Records". The annual training covers "Fair Competition" standards, including those surrounding FERC separation and disclosure of information and cost allocations, but does not explicitly mention the EDECA Standards.

Management also provided a set of slides outlining "Utility Affiliate Rules," which noted that state-level rules apply to each of the utilities, aiming to ensure that no utility customer subsidization of affiliate operations occur and that no preference can be gained by an affiliate due to its relationship with its regulated utility. Management's comments on a draft of this report noted that, in October 2019, employees of PHI's regulated utilities, including ACE, were required to receive training on affiliate regulations and relationships. These materials state that no preferential rates or treatment will be provided by the utility to its affiliates or customers, sharing of confidential customer information will only be done with affiliates in the same manner in which it is shared with non-affiliates, and language forbidding an utility and its affiliates from speaking for one another. Management noted the following legal and regulatory provisions (other than the Standards) that govern the protection of customer information:

- New Jersey Public Utility Consumer Protection Standards (N.J.S.A. 48:3-85)

- New Jersey's Identity Theft Protection Act (N.J.S.A. 56:11-44) and
- Prohibited Actions Relative to Display of Social Security Numbers (N.J.S.A. 56:8-164).

Additionally, ACE reports that at no time during the audit period did it solicit non-public information from unaffiliated suppliers for release to a retail affiliate., Management reported no known complaints during the audit period associated with the release of customer information.

d. Conclusions

40. The ACE Compliance Plan addresses Section 14:4-3.4(a) of the Standards.

41. ACE made releases of customer proprietary information during the audit period to RCBSs and did not make the required postings. *(See Recommendation #7)*

Management believes that because such sharing occurred pursuant to a contract, that no posting was required. We do not agree with this interpretation of the Standards, as it is overly broad and could permit a utility and its affiliate to enter into a contract to avoid this requirement. The nature of the releases made pursuant to these contracts - - chiefly to an affiliate providing meter reading services - - does not in our minds indicate information required for public posting. But we believe this should be very narrowly interpreted, and not applied broadly to all affiliates. We admittedly raise this as a potential area of concern, as opposed to one noted in ACE's disclosures, ensuring it does not continue in the future can prevent future actual issues from occurring.

42. ACE applied adequate processes to protect customer proprietary information from inappropriate internal release during the audit period.

e. Recommendations

7. Management should change its interpretation of Section 14:4-3.4(a) and Section 14:4-3.4(b) of the Standards regarding contractual relationships and their impact on disclosure requirements. *(See Conclusion #41)*

Management's assertion presents a potential way a utility and affiliate could circumvent these portions of the Standards. It should not be applied in the future.

2. Providing Other Non-Public Information

a. Statement of Applicable Requirements

Section 14:4-3.4(b) of the Standards provides that:

> *An electric and/or gas public utility shall make available non-customer specific non-public information acquired as a result of operating the public utility's distribution system, including information about an electric and/or gas public utility's natural gas or electricity purchases, sales, or operations or about an electric and/or gas public utility's gas-related goods or services, electricity-related goods or services, to a related competitive business segment of its public utility holding company only if the electric and/or gas public utility makes such information available, via a public posting, to all other service providers on a non-discriminatory basis, and keeps the information open to public inspection.*

1. *An electric or gas public utility is permitted to exchange proprietary information on an exclusive basis with its PUHC or a related competitive business segment of its public utility holding company, provided it is necessary to exchange this information in the provision of the corporate support service permitted by N.J.A.C. 14.4-3.5(i) and (j).*
2. *The PUHC's or related competitive business segment's use of such proprietary information is limited to its use in conjunction with the permitted corporate support services, and is not permitted for any other use.*

b. Summary of Audit Activities

These provisions provide protection to competitors by preventing affiliate exploitation of information and data generated by the public utility. The PUHC and the related competitive business segments could gain competitive advantage in the following manner:

- Using information gathered through the operation of the utility system to gain competitive advantage in identifying market opportunities or problems
- Inappropriate use or exclusive exchange of proprietary data to preclude unaffiliated suppliers from obtaining information available to the PUHC and its related competitive business segment.

The ACE Compliance Plan should adequately address employee obligations under this standard. Moreover, any release of covered information should meet the posting and continuous availability requirements of the standard. We sought to determine if the holding company or a holding company RCBS received non-customer-specific information acquired by the utility in the operation of its distribution system, and whether it was then made available to other service providers via a public posting. To the extent that non-specific customer information resides on a website that is readily accessible by competitors, we believe that the Company would meet the requirements of the standard. We reviewed the utility's planning processes to determine if this non-specific information was acquired by any RCBS during the planning process, and reviewed management's practices concerning the use of non-specific customer information.

As to the exclusive exchange of proprietary information between the utility and its holding company or a holding company RCBS necessary for corporate support services, we sought to identify whether such information had been exchanged. To the extent that such data are required for the provision of support service pursuant to and permitted by N.J.A.C. 14.4-3.5(i) and (j) then it would meet the requirement.

c. Findings

ACE's current Compliance Plan states that it will limit the provision of non-customer specific non-public information except in instances where a retail affiliate may need such information to provide corporate or shared services. Management reported that it made no releases of non-customer specific non-public information acquired as a result of operating ACE's distribution system available to any related competitive business segment of its public utility holding company outside of disclosures made as part of its contract with Millennium Account Services. Management believes that, because such sharing occurred pursuant to a contract, no posting was required. We do not agree with this interpretation of the Standards, as it is overly broad and could permit a utility and its affiliate to enter into a contract to avoid this requirement.

d. Conclusions

43. The Compliance Plan addresses Section 14:4-3.4(b) of the Standards.

44. ACE made releases of information covered by this portion of the Standards and did not make required postings. *(See Recommendation #6)*

While we do not consider the release of information to MAS inappropriate or warranting posting of customer information, we believe that an interpretation that any contract with an affiliate sufficient to ignore this provision is inappropriate.

e. Recommendations

We have no separate recommendations pertaining to this portion of the Standards, save for the one listed above regarding both Sections 14:4-3.4(a) and 14:4-3.4(b).

3. Providing Lists of Generation or Gas Service Providers

a. Statement of Applicable Requirements

Section 14:4-3.4(c) of the Standards provides that:

> *When an electric and/or gas public utility makes available a list of electric generation and/or gas service suppliers (suppliers), said list shall only contain those suppliers who are duly licensed by the Board and comply with the electric and/or gas public utility's Board-approved tariff to operate on its distribution system. Said list shall be maintained in alphabetical order, and not highlight or otherwise promote any particular supplier.*

b. Summary of Audit Activities

This provision limits utility-provided lists of competitive suppliers of electric generation and gas service to those licensed by the Board and it precludes any form of emphasis on a particular supplier on such lists. We focused on determining:

- Whether supplier lists contained all those licensed by the Board and only those licensed
- Whether any emphasis existed by location, print, or other identifiable features on any supplier on the list
- Whether the Compliance Plan adequately addresses the release requirements of this provision.

Sections 14:4-3.3(n), 14:4-3.4(c), 14:4-3.4(f), and 14:4-3.4(g) are related. Our audit activities were the same as those set forth for Section 14:4-3.3(n).

c. Findings

The Compliance plan restates this provision of the Standards, including the portion about alphabetizing the list of suppliers. Our broader findings about this issue are summarized in Section F.10 of this report, regarding Section 14:4-3.3(m). As noted in that section, ACE's website provides customers with information regarding available suppliers via a link to a site hosted by the BPU. The list of suppliers provided to us in response to a data request pre-dated our audit period, and did not list the eligible suppliers in alphabetical order as prescribed.

d. Conclusions

45. ACE's website complied with the intent of Section 14:4-3.4(c) of the Standards, but the supplier lists provided did not.

46. The Compliance Plan adequately addresses the requirements of this portion of the Standards. *(See Recommendation #8)*

e. Recommendations

8. Management should ensure that all supplier lists are maintained in alphabetical order per Section 14:4-3.4(c) of the Standards. *(See Conclusion #46)*

4. Soliciting or Providing Affiliates Information Concerning Unaffiliated Suppliers

a. Statement of Applicable Requirements

Section 14:4-3.4(d) of the Standards provides that:

> *An electric and/or gas public utility may provide non-public information and data which have been received from unaffiliated suppliers to its PUHC or a related competitive business segment of its public utility holding company or other non-affiliated entities only if the electric and/or gas public utility first obtains written affirmative authorization to do so from said unaffiliated supplier.*

Section 14:4-3.4(e) of the Standards provides that:

> *An electric and/or gas public utility shall not solicit the release of such information exclusively to its PUHC or a related competitive business of its public utility holding company in an effort to keep such information from other unaffiliated entities.*

b. Summary of Audit Activities

This provision provides protection to competitors by preventing exploitation of confidential non-public information and data provided by an unaffiliated supplier to the utility. The PUHC and related competitive business segments could gain competitive advantage by:

- Using non-public information provided to the public utility by unaffiliated suppliers to improve the holding company and RCBS understanding of market conditions
- Restricting the use of non-public information provided by an unaffiliated supplier to only the PUHC or related competitive business segment.

We applied the following criteria in examining this provision of the Standards:

- Non-public information and data received from unaffiliated suppliers by the electric or gas public utility can be provided to either the holding company or a related RCBS only if the public utility is authorized by the non-affiliated supplier to release the information

- There should have been no provision of information received from unaffiliated suppliers absent written permission
- The utility compliance plan should adequately address the release requirements of this provision.

We first determined if non-affiliated information and data are shared by the utility with the holding company or any holding company RCBS. If the information and data were shared with the holding company or RCBS, then we would review the unaffiliated supplier's written authorization for release of the information. To the extent that a signed release was provided, we would then consider this provision met.

c. Findings

During the audit period ACE did not solicit any such non-public information from unaffiliated suppliers, nor did it release any information of the type covered by this portion of the Standards to its affiliates. The current Compliance Plan recites this provision of the Standards. The Plan includes a statement that ACE would make such information available only upon receiving written authorization from the supplier to do so.

d. Conclusions

47. During the period of the audit, ACE did not provide or release non-public information subject to 14:4-3.4(d) from any unaffiliated supplier to affiliates.

48. The Compliance Plan adequately addresses Section 14:4-3.4(d) of the Standards.

e. Recommendations

We have no recommendations regarding the requirements of this provision.

5. Soliciting Release of Information Concerning Unaffiliated Suppliers

a. Statement of Applicable Requirements

Section 14:4-3.4(e) of the Standards provides that:

> *An electric and/or gas public utility shall not solicit the release of such information exclusively to its PUHC or a related competitive business of its public utility holding company in an effort to keep such information from other unaffiliated entities.*

b. Summary of Audit Activities

This provision provides protection to competitors by preventing a utility from requesting asymmetric access to information requested from unaffiliated suppliers. We first determined if non-affiliated information and data are shared by the utility with its holding company or holding company RCBS. If so, we would then determine if the information and data were provided to other suppliers pursuant to the requirements of this provision. The solicitation could not be exclusively for the holding company or holding company RCBS in an effort to prevent distribution to nonaffiliated suppliers. To the extent there were any such solicitations, we would review each to determine if it were designed to limit the information distribution.

c. Findings

During the audit period, ACE neither solicited non-public data or information from unaffiliated suppliers for release to an affiliate nor did it release any such information. The current Compliance Plan recites this provision of the Standards.

d. Conclusions

49. During the audit period ACE did not solicit unaffiliated supplier non-public information for release to affiliated entities.

50. The Compliance Plan adequately addresses Section 14:4-3.4(e) of the Standards.

e. Recommendations

We have no recommendations regarding the requirements of this provision.

6. Highlighting Affiliates in Lists of Providers

a. Statement of Applicable Requirements

Section 14:4-3.4(f) of the Standards provides that:

Except upon request by a customer or as authorized in (c) above or otherwise by the Board, an electric and/or gas public utility shall not provide its customers with any list of product and/or service providers, which highlights or otherwise identifies its PUHC or a related competitive business segment of its public utility holding company, regardless of whether such list also includes the names of unaffiliated entities.

b. Summary of Audit Activities

Sections 14:4-3.3(n), 14:4-3.4(c), 14:4-3.4(f), and 14:4-3.4(g) are related. Our audit activities were the same as those set forth for Section 14:4-3.3(n).

c. Findings

Our findings are the same as those set forth for Section 14:4-3.3(n).

d. Conclusions

Our conclusions are the same as those set forth for Section 14:4-3.3(n).

e. Recommendations

Our recommendations are the same as those set forth for Section 14:4-3.3(n).

7. Supplementing Information About Affiliated Providers

a. Statement of Applicable Requirements

Section 14:4-3.4(g) of the Standards provides that:

If a customer requests information about any affiliated product and/or service provider, the electric and/or gas public utility may acknowledge that such affiliated product and/or *service provider exists, but shall provide no additional information unless it provides a list of all providers of gas-related, electricity-related, or other utility-related products and/or services in business in its service territory, including the related competitive business segment of its public utility holding company.*

1. *Any such list shall include all suppliers licensed by the Board.*
2. *Where maintaining such list would be unduly burdensome due to the number of service providers, the electric and/or gas public utility shall not provide a list and may direct the customer to a generally available listing of service providers, for example, the Board, the telephone directory or Internet.*

b. Summary of Audit Activities

Sections 14:4-3.3(n), 14:4-3.4(c), 14:4-3.4(f), and 14:4-3.4(g) are related. Our audit activities were the same as those set forth for Section 14:4-3.3(n).

c. Findings

Our findings are the same as those set forth for Section 14:4-3.3(n).

d. Conclusions

Our conclusions are the same as those set forth for Section 14:4-3.3(n).

e. Recommendations

Our recommendations are the same as those set forth for Section 14:4-3.3(n).

8. Record Keeping Concerning Transactions with Affiliates

a. Statement of Applicable Requirements

Section 14:4-3.4(h) of the Standards provides that:

An electric and/or gas public utility shall maintain complete and accurate records, documenting all tariffed and non-tariffed transactions with its PUHC and a related competitive business segment of its public utility holding company, including but not limited to, all waivers of tariffed or contract provisions.

b. Summary of Audit Activities

These provisions require a utility to keep complete and accurate records of all transactions it has with its holding company and related RCBSs. During transaction testing, and during other work sessions as well, we reviewed the available documentation for numerous transactions between the utility and its affiliates. In addition, we requested all contracts between the regulated and unregulated affiliates and reviewed the contracts it received.

The criteria we applied in examining performance under this standard are set forth in the chapter of this report that addresses transaction testing.

c. Findings

We found that ACE was able to provide requested documentation during the audit. The Compliance Plan recites this provision of the Standards.

d. Conclusions

51. The willingness and ability of ACE, its holding company, and affiliates to provide requested information during our audit demonstrated compliance with the provisions of Section 14:4-3.4(h) of the Standards.

52. The Compliance Plan adequately addresses the requirements of Section 14:4-3.4(h) of the Standards.

e. Recommendations

We have no recommendations regarding the requirements of this provision.

9. Record Retention Requirements for Transactions with Affiliates

a. Statement of Applicable Requirements

Section 14:4-3.4(i) of the Standards provides that:

> *An electric and/or gas public utility shall maintain such records in compliance with the time frame required by N.J.A.C. 14:5-5.2 or longer if another government agency so requires.*

b. Summary of Audit Activities

These provisions require that the records of transactions between the utility and its holding company or holding company RCBSs be maintained in accordance with the period specified in N.J.A.C. 14:5-5.2.

c. Findings

Our audit work produced no case where transaction documentation was unavailable because of a failure to retain it. As noted in Section D.1 of this report, some of the electronic files were not able to be opened. The current Compliance Plan recites this provision of the Standards.

d. Conclusions

53. ACE provides adequately for the retention of records of transactions involving it and its holding company or holding company RCBSs.

54. The Compliance Plan adequately addresses the requirements of Section 14:4-3.4(i) of the Standards.

e. Recommendations

We have no recommendations regarding this provision of the Standards.

10. Inspection of Records

a. Statement of Applicable Requirements

Section 14:4-3.4(j) of the Standards provides that:

An electric and/or gas public utility shall make such records available for Board and/or Rate Counsel review upon 72 hours' notice, or at a time mutually agreeable to the electric and/or gas public utility and the Board and/or Rate Counsel.

b. Summary of Audit Activities

These provisions require that transaction records be made available for BPU and the New Jersey Division of Rate Counsel (formerly, the Ratepayer Advocate) review upon 72 hours' notice. During conduct of the audit, we sought access to records and documents pertaining to transactions involving the utility, holding company, and holding company RCBSs.

c. Findings

We found that the companies were able to produce the records and documents as required during the audit. We did not gain from any involved party any evidence of a failure to produce requested records. The current Compliance Plan recites this provision of the Standards in its section on records retention.

d. Conclusions

55. ACE was in compliance with Section 14:4-3.4(j) of the Standards.

56. The Compliance Plan adequately addresses the requirements of Section 14:4-3.4(j) of the Standards.

e. Recommendations

We have no recommendations regarding the requirements of this provision.

11. Bid and Contract Records

a. Statement of Applicable Requirements

Section 14:4-3.4(k) of the Standards provides that:

An electric and/or gas public utility shall maintain a record of all contracts and related bids for the provision of work, products and/or services to and from the electric and/or gas public utility to and from the PUHC or related competitive business segments of its public utility holding company in compliance with N.J.A.C. 14:5-5.2 or longer if another government agency so requires.

b. Summary of Audit Activities

These provisions require that the utility maintain records of all contracts with the holding company and holding company RCBSs in accordance with N.J.A.C. 14:5-5.2.

During audit data reviews, interviews, and other work sessions as well, we reviewed the available documentation for numerous transactions between the utility and its affiliates. In addition, we requested and were not denied access to contracts between the utility and non-utility affiliates.

We also sought to determine the utility's practices for retaining the documents required by this provision.

c. Findings

During audit data gathering and analysis and field work management provide access to all the agreements that we requested. The current Compliance Plan recites this provision of the Standards.

d. Conclusions

57. ACE's practices were sufficient to assure retention of all contract information requested as part of audit data analysis and field work.

58. The Compliance Plan adequately addresses the requirements of Section 14:4-3.4(k) of the Standards.

e. Recommendations

We have no recommendations with respect to this provision of the Standards.

H. Separation Standards (Section 14:4-3.5)

Section 14:4-3.5 of the Standards applies to interactions between a utility and an RCBS of its holding company or the holding company itself if it offers or provides competitive services to retail customers in New Jersey. These standards do not apply, however, in cases where an internal RCBS exists within the utility itself and where there are transactions between the utility and such an RCBS. Separate standards, which Section G of this report addresses, apply to interactions between utilities and their internal RCBSs.

1. *Separate Corporate Entities*

a. Statement of Applicable Requirements

Section 14:4-3.5(a) of the Standards provides that:

> *An electric and/or gas public utility, its PUHC and related competitive business segments of its public utility holding company shall be separate corporate entities.*

b. Summary of Audit Activities

These provisions require that the utility, its PUHC, and the non-regulated RCBSs of the holding company be separate corporate entities. We examined whether ACE existed as a legal entity separate and distinct from its holding company and any RCBS of its holding company. We considered relevant filings with the Securities and Exchange Commission, organization charts, a variety of data requests and interview results to assess whether the required corporate separation existed between the utility, on the one hand, and any holding company or holding company RCBSs, on the other hand.

c. Findings

We found that ACE existed and operated as a distinct corporate entity during the audit period, as it has historically, and as it will most likely do in the future. Our examinations in other audit tasks, specifically Chapter IX, *Executive Management and Corporate Governance*, discuss our findings and conclusions regarding the sufficiency of management's organization structure and utility, particularly ACE-specific, emphasis. The current Compliance Plan recites this provision of the Standards and includes a statement that ACE is a separate entity from its parent organizations, retail affiliates, and shared service companies.

d. Conclusions

59. The ACE/PHI/Exelon structure and operation complied with this provision of the standards during the audit period.

60. The Compliance Plan adequately addresses the requirements of Section 14:4-3.5(a) of the Standards.

e. Recommendations

We have no recommendations regarding the requirements of this provision.

2. Separate Books and Records

a. Statement of Applicable Requirements

Section 14:4-3.5(b) of the Standards provides that:

An electric and/or gas public utility and related competitive business segments of its public utility holding company shall keep separate books and records.

b. Summary of Audit Activities

This provision requires that the holding company keep separate books and records for the regulated utility and for its non-regulated affiliates. We examined whether utility books and records are fully separate and distinct from those of the holding company and any holding company RCBS. We conducted on-site interviews to review the company books and records.

c. Findings

We found that ACE maintains separate books and records for the required entities. The Compliance Plans in effect during the audit period each included an interpretation of this section of the Standards, a statement of ACE's compliance with them, and examples of that compliance (separate books and records in accordance with the FERC Uniform System of Accounts and the Cost Allocation Manual which governs transactions with affiliates and how management accounts for them).

d. Conclusions

61. ACE/PHI/Exelon complied with the provisions of Section 14:4-3.5(b) during the audit period.

Each affiliate's books and records were kept separately pursuant to the Standards. Further discussion of accounting books and records can be found in Chapter XIV, *Accounting and Property Records*.

62. The Compliance Plan adequately addresses the requirements of Section 14:4-3.5(b) of the Standards.

The Plan states that all books and records of ACE and all affiliates must be separately kept and made available for examination by the Board on request.

e. Recommendations

We have no recommendations with respect to this provision of the Standards.

3. Conformity of Books and Records with USOA

a. Statement of Applicable Requirements

Section 14:4-3.5(c) of the Standards provides that:

> *Electric and/or gas public utilities' books and records shall be kept in accordance with applicable Uniform System of Accounts (USOA), 18 CFR Part 101, as amended and supplemented, which is incorporated by reference herein.*

b. Summary of Audit Activities

This provision requires that the utility maintain books and records in accordance with USOA. We did not undertake a full-scale examination of conformity with each USOA requirement. We found during our assessment of management and operations that the company generally complied with the USOA requirements. We address this issue in the *Accounting and Controls* section of our companion reporting on the results of our assessment of management and operations.

c. Findings

The ACE chart of accounts is consistent with USOA. The current Compliance Plan covers Sections 14:4-3.5(b), (c), and (d) jointly; its treatment of these standards is summarized in the findings sections above regarding Section 14:4-3.5(b). We found the Plan's coverage of each of these three sections appropriate.

d. Conclusions

63. ACE complied with the requirements of Section 14:4-3.5(c) during the audit period.

64. The Compliance Plan adequately addresses the requirements of Section 14:4-3.5(c) of the Standards.

e. Recommendations

We have no recommendations with respect to this requirement.

4. *Availability of Books and Records for Board Examination*

a. Statement of Applicable Requirements

Section 14:4-3.5(d) of the Standards provides that:

> *The books and records of its PUHC or a related competitive business segment of an electric and/or gas public utility's holding company engaged in transactions, interactions and relations with the electric or gas public utility shall be open for examination by the Board.*

b. Summary of Audit Activities

This provision requires that the utility's holding company provide access to its books and records and to those of its non-regulated RCBSs. During the conduct of its audit, we sought access to a host of records and documents pertaining to the utility, utility holding company, and holding company RCBSs. We tested compliance by assessing whether all requests for information necessary to verify compliance with the standards subject to this audit produced substantially complete responses.

c. Findings

Management provided substantially-complete responses to all of our requests for information, whether through data requests, access to documents, or interviews. We believe that ACE has demonstrated a strong willingness and ability to make its books and records open for examination for compliance with the Standards. We found the Plan's coverage of this portion of the Standards appropriate.

d. Conclusions

65. All of ACE/PHI/Exelon's entities and personnel complied with the requirements of Standards Section 14:4-3.5(d) in responding to our requests for information; they demonstrated in interviews and responses to data requests a cooperative and supportive attitude towards regulatory needs and objectives.

66. The Compliance Plan adequately addresses the requirements of Section 14:4-3.5(d) of the Standards.

e. Recommendations

We have no recommendations regarding the requirements of this provision.

5. *Sharing of Space, Services, and Equipment*

a. Statement of Applicable Requirements

Section 14:4-3.5(e) of the Standards provides that:

> *An electric and/or gas public utility shall not share office space, office equipment, services, and systems with a related competitive business segment of its public utility holding company, except to the extent appropriate to perform shared corporate support functions permitted under this subsection or as follows:*

1. *An electric and/or gas public utility may access the computer or information systems of a competitive related business segment of its PUHC or allow a related competitive business segment of its PUHC to access its computer or information systems, for purposes of the sharing of computer hardware and software systems and may share office space, office equipment, services and systems, provided adequate system protections are in place to prevent the accessing of information or data between the utility and its affiliate(s) which would be in violation of this subchapter.*
    i. *Prevention of unauthorized access to computer and information systems must be specifically addressed as part of an electric and/or gas public utility's compliance plan submitted pursuant to N.J.A.C. 14:4-3.7(b).*

b. Summary of Audit Activities

These provisions allow a utility and an RCBS of its PUHC to share office space, office equipment, services and systems only if:

- It is required as part of providing permitted shared corporate support functions, or
- Adequate system protections are in place to prevent accessing of data that would violate the Standards.

The effect of the two bulleted exceptions is generally to allow shared space, services, systems, and equipment, provided that security against data exchange is adequate. Given the breadth of this exception, our examination of performance under this standard sought to determine whether, in cases where sharing is done, adequate measures are taken to prevent inappropriate information exchange.

We requested information regarding the sharing of Information Technology services between the utility, its holding company, and holding company RCBSs. As part of our work summarized in Chapter XXI, *Support Services (Information Technology)*, we conducted interviews with personnel from the Information Technology Department and followed up with several data requests. In addition, we reviewed the listing of databases and policies and procedures pertaining to IT security and data base access.

c. Findings

We asked management for a list of all databases owned by the holding company and its subsidiaries and to identify which of those required protection vis-à-vis the Standards. We also sought information stating which specific departments and work groups had routine access to these databases, and those who were granted access on an exception basis. We requested detailed descriptions of the guidance given and oversight exercised over database owners regarding access to their data bases to ensure compliance with the Standards.

Management identified a list of 375 applications and databases which Exelon owns and which the holding company, service companies, and PHI utilities use.

Database Type	Number
Work and Asset Management	166
PHI Bill & Payment Processing, Customer Care, Legacy Meter Services	92
Digital Grid	36
PHI - Electric Real Time	28
PHI - Outage Management & Geospatial	18
PHI - Operate & Restore (Gas)	15
PHI - Energy Procurement	12
ComEd - Customer Care Center	6
PECO - Electric Real Time	1
PECO - Outage Management & Geospatial	1
Total	375

We sought to review the guidance given to and oversight exercised over database owners regarding access to their databases to ensure compliance with the provisions of the Standards addressing information sharing among affiliates and organizational units. Corporate-level Information Technology concerns extend beyond those involving the provisions of these Standards, and involve NERC critical infrastructure compliance, FERC separation compliance, SOX compliance, and cyber security concerns. See Chapter XXI, *Support Services (Information Technology)* and XVIII, *Cyber Security and System Vulnerability*, which include additional information about our field work in this area and how management addresses these broader concerns. An Exelon-level procedure from the Corporate and Information Security Services group establishes the rules and procedures for accessing each of the cited applications and databases. This procedure, Logical Access Control, describes the roles and responsibilities over various access and security protocols that Exelon has established for these systems. Key topics included in this procedure include:

- Account ID Management
- Access Management for Network Authentication
- Password Configuration Management
- Access Requests, Approvals, and Provisioning Management
- Access Reviews, and. Access Revocation.

The Logical Access Control documentation assigns responsibility to various groups and individuals accountable for these applications and databases. At the corporate level, Corporate & Information Security Services establishes Exelon-wide policies and procedures, while the Information Technology organization has overall responsibility for the provision of technological services to Exelon and PHI entities, including ACE. Additional individuals have the following responsibilities surrounding the determination of which individuals gain access to each relevant database, along with the various protocols and procedures outlined the Logical Access Control document:

- "Business Owners" manage applications and databases and all matters not governed at the corporate IT level.
- "Application Owners" operate each of the individual applications and databases and determine which individuals should gain access to each.

- "Infrastructure Owners" operate the network and infrastructure systems that support the operation of these applications and databases.
- "Custodians" have ultimate responsibility for the proper handling and safekeeping of each application and database, including the protection of Company Information Assets and data.

Management reported that it appropriately limited access to each database during the audit period to only those that were authorized to have such access. Management did not grant any database access on an exception basis.

The Compliance Plan includes a summation of management's interpretation of the Standards. Management also includes in the Plan a statement that it is in compliance with this specific section of the Standards, confirming that each employee at any of the various Exelon entities utilizes individual logon credentials and that management (using the methods described above) creates unique access for each use, permitting an employee access only to those systems required for their job performance.

As discussed in Section 14:4-3.5(u) of this report, ACE leases spaced in an affiliate-owned office building. Our findings related to this arrangement are discussed there.

d. <u>Conclusions</u>

67. Management utilizes appropriate systems of access and controls over its applications and databases.

68. The Compliance Plan adequately addressees this portion of the Standards.

e. <u>Recommendations</u>

We have no recommendations regarding this portion of the Standards.

6. Authorized Joint Products and Services

a. <u>Statement of Applicable Requirements</u>

Section 14:4-3.5(f) of the Standards provides that:

> *Subsection (e) above does not preclude an electric and/or gas public utility from offering a joint product and/or service, provided such joint product and/or service is authorized by the Board and is available to all non-affiliated product and/or service providers on the same terms and conditions, for example, joint billing services.*

b. <u>Summary of Audit Activities</u>

The purpose of the provisions is to ensure that any joint products and or services offered by the utility are offered to non-affiliated providers on the same terms and conditions. We focused on determining, in the event of any utility-offered products or services jointly with a holding company RCBS, whether they were offered to non-affiliated providers on the same basis. We reviewed the utility's tariffs to determine whether the company had any competitive products and services. In addition, we asked whether the utility offered any competitive services, and gathered information on the product offerings of the RCBS who provide services at retail in New Jersey.

c. Findings

ACE offered no joint products or services with an RCBS during the audit period. The Company states, and our audit work indicated, that there have been no joint marketing, promotional or advertising programs with an RCBS during the audit period. The Compliance Plan includes management's interpretation of this section of the Standards. It goes on to state that employees receive instruction to contact the Legal Services Group before providing any joint product or service with a Retail Affiliate, so that appropriate filings and Board approval can be established and so that appropriate procedures can be put in place to ensure Standards compliance.

d. Conclusions

69. ACE made no structured joint product or service offerings with an RCBS during the audit period.

70. The Compliance Plan adequately addresses the requirements of Section 14:4-3.5(f).

e. Recommendations

We have no recommendations with respect to this portion of the Standards.

7. Joint Purchases

a. Statement of Applicable Requirements

Section 14:4-3.5(g) of the Standards provides that:

> *An electric and/or gas public utility and its PUHC or related competitive business segments of its public utility holding company may make joint purchases of products and/or services, but not those associated with merchant functions.*

b. Summary of Audit Activities

This provision of the standards confirms the general permissibility of joint purchases, which we address in the ensuing section of this audit report. However, the provision also imposes a strict prohibition against joint purchases that relate to the merchant function. We sought to verify that ACE made no merchant-function related purchases jointly with a holding company or holding company RCBS. We requested copies of all joint purchasing agreements that included both the regulated utility and a holding company or holding company RCBS. Our examination of *Power Supply and Market Conditions* (Chapter III), also sought detailed information about how ACE makes purchases and what transactions took place among it and affiliates during the audit period, regardless of whether the affiliates were RCBSs or not.

c. Findings

Section 14:4-3.2 of the Standards provides the following definitions relevant to Section 14:4-3.5(g):

> *"Joint purchases" means purchases made by a parent or holding company or affiliate thereof for use by one or more affiliates, the fully allocated costs of which are allocated to be paid proportionally by the affiliates, based upon utilization.*
>
> *"Joint purchases allowed" means purchases not associated with merchant functions, examples of which would be joint purchases of office supplies and telephone services.*
>
> *"Joint purchases not allowed" means purchases associated with merchant functions, examples of which would be gas and electric purchasing for resale, purchasing of gas transportation and storage capacity, purchasing of electric transmission, system operations and marketing.*
>
> *"Merchant functions" means the marketing and/or the provision of electric generation service and/or gas supply service to wholesale or retail customers, as opposed to the marketing and/or provision of transmission and distribution services, by an electric and/or gas public utility.*

Management stated that no joint purchasing agreements were in place with ACE and its holding company or an RCBS during the EDECA audit period, per se, as no Exelon entities agree to joint purchase agreements for goods or services. Exelon does however negotiate with vendors in the event that volume discount for goods and services are available. If such transactions do occur, the contracts for them involve the vendor and each specific Exelon entity directly, with any associated charges invoiced to the specific entity; but no such purchases occurred with respect to the "merchant function" - - those where ACE and an affiliate jointly solicit purchases of electric supply of transmission capacity.

The Compliance plan summarizes this portion of the Standards, and states management's position that ACE complies with it and will continue to do so in the future. The Plan cites relevant defined terms "Joint purchases allowed" and "Joint purchases not allowed" as further guidance regarding the transactions that this portion of the Standards prohibit.

d. Conclusions

71. ACE complied with Section 14:4-3.5(g) of the Standards regarding joint purchases associated with merchant functions; no covered purchases took place during the audit period.

72. The Compliance Plan adequately addresses the requirements of Section 14:4-3.5(g).

e. Recommendations

We have no recommendations regarding the requirements of this provision.

8. Pricing and Reporting of Joint Purchases

a. Statement of Applicable Requirements

Section 14:4-3.5(h) of the Standards provides that:

The electric and/or gas public utility shall insure that all such joint purchases are priced, reported, and conducted in a manner that permits clear identification of the electric and/or gas public utility's portions and its PUHC or the related business segment's portion of such purchases, and that direct costs of the joint purchase(s) as well as the indirect purchasing costs are apportioned between the electric and/or gas public utility and the related competitive business segment of the public utility holding company in direct proportion to the relative amounts of the purchased products(s) and/or services(s) received and/or utilized, respectively, in accordance with these standards and other applicable Board allocation and reporting rules.

b. Summary of Audit Activities

The purpose of these provisions is to ensure, for all joint purchases, proper record keeping, pricing, and assignment of direct and indirect costs between the utility and the RCBS. The provision's two principal requirements include the ability to segregate the utility portion of joint purchases and the allocation of both the direct and indirect costs of purchases to the utility on the basis of its portion of the purchases. Therefore, we focused on the following criteria factors in examining performance under this standard:

- Whether recordkeeping and reporting of jointly made purchases provides for accurate identification and segregation of the utility portion of purchases made through common efforts
- Whether the costs that the utility pays for purchases made through common efforts are in strict proportion to the amounts purchased for its use.

c. Findings

We requested a list of all joint purchasing agreements that included both the regulated utility and an unregulated affiliate. There were no joint purchasing agreements in place during the EDECA audit period. The current Compliance Plan appropriately summarizes the provision of the Standards, including the treatment of direct and indirect costs associated with any such purchases. The Plan states that ACE has been in compliance with this portion of the Standards and will continue to operate in compliance in the future.

d. Conclusions

73. No transactions subject to this portion of the Standards occurred during the audit period.

74. The Compliance Plan adequately addresses the requirements of Section 14:4-3.5(h).

e. Recommendations

We have no recommendations regarding the requirements of this provision.

9. Shared Services

a. Background

Section 14.4-3.5(i) of the Standards provides that:

An electric and/or gas public utility, its public utility holding company and related competitive business segments, or separate business segments of the public utility holding company created solely to perform corporate support services may share joint corporate oversight, governance, support systems and personnel. Any shared support shall be priced, reported and conducted in accordance with N.J.A.C. 14:4-3.4 and this section, as well as other applicable Board pricing and reporting rules

b. Summary of Audit Activities

The provision of and charging for common services falls among the topics addressed in the reporting of our examination of *Cost Allocation Methods*. The Compliance Plan adequately addresses this portion of the Standards.

10. Protection of Confidential and Market Information

a. Statement of Applicable Requirements

Section 14:4-3.5(j) of the Standards provides that:

Such joint utilization shall not allow or provide a means for the transfer of confidential customer or market information from the electric and/or gas public utility to a related competitive business segment of its public utility holding company in violation of these standards, create the opportunity for preferential treatment or unfair competitive advantage, lead to customer confusion, or create significant opportunities for cross-subsidization of a related competitive business segment of the public utility holding company. In the compliance plan required pursuant to N.J.A.C. 14:4-3.7(a) through (e), a senior corporate officer from the electric and/or gas public utility and public utility holding company shall verify the adequacy of the specific mechanisms and procedures in place to ensure the electric and/or gas public utility follows the mandates of this subchapter, and to ensure the electric and/or gas public utility is not utilizing joint corporate support services as a conduit to circumvent this subchapter.

b. Summary of Audit Activities

This provision prohibits the utility from sharing confidential customer and market information with a holding company related competitive business segments. The purpose of this prohibition is to prevent opportunities for cross-subsidies, customer confusion, and unfair competitive advantage. Cross-subsidies and unfair market advantages could occur in ways such as the following:

- Identification of new market opportunities
- Information concerning strategic direction of the company
- Acquiring market sensitive and related information
- Providing an opportunity for customer confusion between the identity of the utility and its PUHC or its RCBS.

In examining compliance, we focused on the following factors:

- Sufficient controls should be in place to protect competitively sensitive information regarding joint services

- The compliance plan should address handling of market sensitive information when joint services are being utilized
- Joint planning should be conducted in a manner that will protect competitively sensitive information.

This provision addresses the transfer of both customer and market information. A number of other provisions in the Standards address the protection of customer information. We address the sufficiency of those protective efforts in connection with its discussion of those standards. Therefore, the focus of audit activities here was marketing, where our focus was on determining whether:

- Adequate steps were taken to prevent the transfer of protected information during planning and marketing activities
- Whether the Compliance Plan adequately addresses responsibilities imposed by this provision of the Standards.

Through the use of data requests and interviews, we reviewed and analyzed the planning process at the utility and holding company as it relates to this provision of the Standards. We sought to determine whether competitive sensitive information was shared during the planning cycle, and what controls were in place to ensure that competitive sensitive information generated at the utility was not used by affiliates.

As its initial step, we reviewed the Compliance Plan and its procedures for complying with the Standard. We attempted to identify opportunities in joint processes between the utility and its PUHC or RCBS where inappropriate sharing of information could occur. We then reviewed and analyzed processes to ensure that adequate controls were in place to protect competitively sensitive information. To assess the controls, we reviewed the information flows, the granularity of the information, which personnel had access, and how the information was used. Because of the amount of data and its competitive sensitivity, we placed particular emphasis on the planning process at the utility and the PUHC.

c. Findings

We conducted the activities described under other provisions (see, for example, Sections D.3, D.12, and F.5.), to address the issues relevant to this provision as well. The findings in those sections address the criteria for this portion of the Standards. Much of our work in this area was carried out in other portions of the management audit, which we documented in Chapters V, *Capital Allocation* and XII, *Strategic Planning*. We reviewed the strategic and business plans of ACE. We found the business plans separate from those of affiliated companies and we did not identify any use of ACE information by affiliates in their plans and found no indication of inappropriate commingling of information or analysis during the planning processes.

The most recent Compliance Plan in effect during the audit period includes certifications by the Vice President and President ACE Region and by the PHI Vice President & General Counsel, affirming the existence of sufficient mechanisms in place to assure compliance with the Standards and that ACE is not using corporate support services to circumvent the Standards. Previous versions of ACE's Plans in effect during the audit period included such affirmations from both the

Pepco Holdings Chairman, President, and CEO and ACE's President & CEO. All Plan affirmations met the Standards requirement that such statements must be from "a senior corporate officer from the electric and/or gas public utility and public utility holding company".

d. Conclusions

75. We found no evidence that the planning process provides an undue disadvantage or advantage to ACE vis-à-vis other affiliates.

76. The Compliance Plan adequately addresses the requirements of Section 14:4-3.5(j).

e. Recommendations

We have no recommendations with respect to this section of the standards.

11. Use of Utility Name and Logo

a. Statement of Applicable Requirements

Section 14.4-3.5(k) of the Standards provides that:

A related competitive business segment of a public utility holding company shall not trade upon, promote, or advertise its relationship with the electric and or gas public utility, nor use the electric and/or gas public utility's name and/or logo in any circulated material, including, but not limited to, hard copy, correspondence, business cards, faxes, electronic mail, electronic or hardcopy advertising or marketing materials, unless it discloses clearly and conspicuously or in audible language that:

1. *The PUHC or related competitive business segment of the public utility holding company "is not the same company as the electric and/or gas public utility";*
2. *The PUHC or related competitive business segment of the public utility holding company is not regulated by the Board; and*
3. *"You do not have to buy products in order to continue to receive quality regulated services from the electric and/or gas public utility.*

b. Summary of Audit Activities

These provisions address how a holding company RCBS may promote itself, particularly if it shares a similar name or logo with the regulated utility. A holding company RCBS may not use its connection with the utility to promote itself, nor may it use the utility's name or logo in any form of communication, unless it clearly and conspicuously provides the required disclaimer. The disclaimer is required only with regard to the use of the utility's name or logo in New Jersey.

We examined the use of logos, trademarks and service marks, in order to determine whether there was any shared use of the utility name or logo, and, if so, whether the required disclaimer was prominently displayed. We reviewed of utility and affiliate logos, trademarks and service marks and details of where the marks were used. We also reviewed the websites and utility compliance plan for adherence to these standards.

c. Findings

The current Compliance Plan recites Section 14.4-3.5(k) of the Standards. Management reported that the enterprise traded under the name Conectiv Power Delivery until 2005 - - and through that time various RCBS's utilized some versions of the "Conectiv" name, meaning that usage of the required disclaimer was necessary. But since that time, the enterprise operated under the name Atlantic City Electric, and maintained usage of this name throughout our Audit period. None of ACE's affiliates used any name or logo that was derived from the Atlantic City Electric name, nor mimicked or otherwise invoked the name and or logo used by ACE. As stated in Section F. Authorized Joint Products and Services, management made no use of joint marketing, promotional or advertising programs during the audit period. Management informed us that it was not aware of any use of ACE's logo in New Jersey by an RCBS.

Constellation Energy's website and other materials make use of the Exelon logo. While Constellation Energy and Atlantic City Electric have distinct logos, these logos at times contain the same text: "An Exelon Company." ACE began using this text in its logo in 2016.

The ACE Logo **The Constellation Logo**

We observed Millennium Account Services vehicles in the field; the logo did not utilize or reference that of ACE. The truck did have a sign noting that the vehicle was used to provide service for ACE and South Jersey Gas, which given the nature of the work performed we consider appropriate.

d. Conclusions

77. No RCBS website makes use of the Atlantic City Electric name or logo, nor did any other material we reviewed.

78. Constellation Energy's logo does makes use of the Exelon logo, and both it and ACE note they are affiliated with Exelon.

However, we observed appropriate usage of the required disclaimer, and found the text referencing Exelon affiliation to be acceptable under the Standards.

79. The Compliance Plan otherwise adequately addresses Section 14.4-3.5(k) of the Standards.

According to the Plan, retail affiliates are not permitted to trade upon, promote or advertise its relationship to ACE, or use the Utility's name or logo in any publicly circulated materials in New Jersey without using the required disclaimer. The Plan's discussion of prior such usage by affiliates and the change in requirements that usage necessitated provides helpful context and guidance in the event circumstances change in the future.

e. Recommendations

We have no separate recommendations regarding this provision of the Standards.

12. Non-New Jersey Use of Utility Name and Logo

Section 14.4-3.5(l) of the Standards provides that:

> *The requirement of the name and/or logo disclaimer set forth in (k) above is limited to the use of the name and/or logo in New Jersey.*

This section of the standards does not provide a conduct standard that is auditable. It merely narrows the restrictions imposed by Standard Section 14:4-3.5(k). ACE's Compliance Plan appropriately notes this requirement.

13. Promising or Implying Preferred Treatment

a. Statement of Applicable Requirements

Section 14:4-3.5(m) of the Standards provides that:

> *An electric and/or gas public utility, through actions or words, shall not represent that, as a result of its PUHC or a related competitive business segment of the public utility holding company's relationship with the electric and/or gas public utility, its affiliate(s) will receive any different treatment than other product and/or service providers.*

b. Summary of Audit Activities

The requirements of this section are similar to those of Sections 14:4-3.3(a) and (c). Our audit activities were the same as those set forth for Sections 14:4-3.3(a) and (c).

c. Findings

Our findings are the same as those set forth for Sections 14:4-5.3(a) and (c). We note that ACE's Compliance Plans reviewed included an acceptable summation of this portion of the Standards. The 2017 version of the Plan further notes that ACE employees received training on this matter, as do employees of both service companies and RCBSs. Management's comments on a draft of this report noted that, in October 2019, employees of PHI's regulated utilities, including ACE, were required to receive training on affiliate regulations and relationships.

d. Conclusions

Our conclusions are the same as those set forth for Sections 14:4-5.3(a) and (c).

e. Recommendations

Our recommendations are the same as those set forth for Sections 14:4-5.3(a) and (c).

14. Use of Utility Advertising Space

a. Statement of Applicable Requirements

Section 14:4-3.5(n) of the Standards provides that:

> *An electric and/or gas public utility shall not offer or provide to its PUHC or a related competitive business segment of its public utility holding company advertising space in the electric and/or gas public utility's billing envelope(s) or any other form of electric and/or gas public utility's written communication to its customers unless it provides access to all other unaffiliated services providers on the same terms and conditions.*

b. Summary of Audit Activities

These provisions prohibit joint marketing activities between the utility and an RCBS of its holding company. The utility may not promote the holding company RCBS in its billing envelope or in other written communication unless competitors are offered the same opportunity. We examined whether, in any case where space was provided to an RCBS in any written communications to utility customers, it was similarly provided to others. We requested information about all joint marketing activities pertaining to compliance with these provisions of the Standards. We also requested a copy of all utility bill inserts. We also reviewed the utility compliance plan with regard to this section of the Standards.

c. Findings

The Compliance Plan appropriately summarizes this portions of the Standards, states ACE's historical compliance with it and intentions to do so in the future. We reviewed the billing inserts that were sent to customers for all years of the audit period and confirmed that ACE did not offer space in its billing envelope to any retail affiliates. Further, ACE reported that they offered no advertising space in its billing envelopes to its holding company or any RCBS.

d. Conclusions

80. ACE did not provide advertising space for its Holding Company or any RCBSs in utility billing inserts during the audit period.

81. ACE did not provide a holding company or any RCBSs with advertising space in any written customer communications during the audit period.

82. The Compliance Plan adequately addresses the requirements of Section 14:4-3.5(n).

e. Recommendations

We have no recommendations with respect to this portion of the standards.

15. Joint Advertising or Marketing

a. Statement of Applicable Requirements

Section 14:4-3.5(o) of the Standards provides that:

> *An electric and/or gas public utility shall not participate in joint advertising or joint marketing activities with its PUHC or related competitive business segment of its public utility holding company which activities include, but are not limited to, joint sales calls, through joint call centers or otherwise, or joint proposals (including responses to requests for proposals) to existing or potential customers.*
>
> 1. *The prohibition in (o) above notwithstanding, at a customer's unsolicited request, an electric and/or gas public utility may participate, on a nondiscriminatory basis, in non-sales meetings with its PUHC or a related competitive business segment of its public utility holding company or any other market participant to discuss technical or operational subjects regarding the electric and/or gas public utility's provision of distribution service to the customer;*
> 2. *Except as otherwise provided for by these standards, an electric and/or gas public utility shall not participate in any joint business activity(ies) with its PUHC or a related competitive business segment of its public utility holding company which includes, but is not limited to, advertising, sales, marketing, communications and correspondence with any existing or potential customer;*
> 3. *An electric and/or gas public utility shall not participate jointly with its PUHC or a related competitive business segment of the PUHC in trade shows, conferences, or other information or marketing events held in New Jersey; and*
> 4. *An electric and/or gas public utility shall not subsidize costs, fees, or payments with its PUHC or related competitive business segments of its public utility holding company associated with research and development activities or investment in advanced technology research.*

b. Summary of Audit Activities

These provisions prohibit joint marketing activities or the joint funding or support of research and development activities between the utility and an RCBS of its PUHC. Joint advertising or marketing activities between the utility and the PUHC RCBS are prohibited, including (but not limited to):

- Joint sales calls
- Joint call centers
- Joint proposals or responses to RFPs
- Joint advertising, marketing, communications, or correspondence
- Joint participation in trade shows, conferences, or other information or marketing events held in New Jersey
- Joint business activities.

The utility may at the customer's unsolicited request participate in non-sales meetings with its holding company RCBS in order to discuss technical or operational subjects regarding the provision of distribution services, provided the same participation is offered on a nondiscriminatory basis to competitors. Subsidization by the utility of R&D costs, fees, or payments with the PUHC RCBS is prohibited.

We applied the following criteria in examining performance under this standard:

- Except in the case of unsolicited customer requests, the utility should not engage in any of the proscribed joint marketing and sales activities
- The utility should not participate with its holding company or a holding company RCBS in joint funding of research and development activities in a manner that fails to assign a proper share of the costs to the holding company or holding company RCBS.

We requested information on all joint marketing, promotional, and advertising programs that benefited both regulated and competitive services. We asked about sharing of space at trade shows, and requested information on practices and policies for utility participation in non-sales meetings with affiliates or non-affiliates. We have also reviewed the utility compliance plan for its procedures regarding this section of the Standards.

We requested information on the amount of research and development and advanced technology expenditures by the utility and the PUHC or a PUHC RCBS.

c. Findings

The Compliance Plan adequately summarizes this portion of the Standards, including the limited exception noted in sub-Section (o)(1). The Plan notes the compliance training offered to ACE employees and RCBS employees, and includes footnotes providing further interpretations of elements of this portion of the Standards - - we found these items to be correctly interpreted and of informative value. ACE states that it has been and will continue to operate in compliance with all requirements and prohibitions.

Management reports that ACE made no joint presentations, displays, or otherwise coordinated efforts regarding appearances at shows, conventions, fairs, similar events, charitable events, sporting or other entertainment events. ACE did note that the potential does exist for incidental and uncoordinated attendance at these events by utility employees and those of an RCBS, but we do not believe that such occurrences would violate this provision of the Standards.

As noted in Section D.1 of this report, we reviewed the available materials containing the print and other advertisements made by ACE and its affiliates and found no joint marketing materials. Management reported in the Compliance Plan that no joint sales calls or marketing efforts occurred.

Chapter XV, *Customer Service*, of our report addresses in detail various customer service topics, including call centers and other methods of customer contact and communication. While those sections address broadly management's effectiveness and providing and managing those services, we found no concerns in our reviews regarding the restrictions outlined in this portion of the Standards.

The three PHI utilities jointly sponsor the PHI Community Foundation, which involves a series of community initiatives. Samples of these include:

- Economic development
- Fundraising for charities (American Heart Association, March of Dimes, American Cancer Society, as examples)
- Environmental protection activities
- Educational initiatives, including a STEM club
- Various other community support initiatives.

Through these efforts, the PHI Community Foundation made more than $1 million in contributions and combined for more 14,000 community services hours in 2017. We reviewed materials summarizing these activities and found no evidence of participation by or coordination with any RCBS, which is what the Standards are concerned with.

Management confirmed, in response to our questions, that it did not subsidize any costs or make any payments in association with the Research and Development or advanced technology restrictions prohibited by this portion of the Standards. Management did note that some PHI-level Research and Development payments are made, but these costs represent membership fees for industry organizations such as Electric Power Research Institute, Inc. PHI Service Company makes the initial payment for all such costs, and allocated the fees to the ACE, DPL, and Pepco individually.

d. Conclusions

83. ACE and its PUHC and RCBS did not engage in any joint marketing or joint advertising activities prohibited by 14:4-3.5(o) of the Standards.

84. ACE did not fund or support any R&D or advance technology efforts that benefited an RCBS.

85. The Compliance Plan adequately addresses this provision.

e. Recommendations

We have no recommendations regarding this portion of the Standards.

16. Joint Employees

a. Statement of Applicable Requirements

Section 14:4-3.5(p) of the Standards provides that:

> *Except as permitted in (i) and (j) above, an electric and/or gas public utility and its PUHC or related competitive business segments of its public utility holding company which are engaged in offering merchant functions and/or electric related services or gas related services shall not employ the same employees or otherwise retain, with or without compensation, as employees, independent contractors, consultants, or otherwise.*
>
> 1. *Other than shared administration and overheads, employees of the competitive services business unit of the public utility holding company shall not also be involved in the provision of non-competitive utility and safety services, and the competitive services are provided utilizing separate assets than those utilized to provide non-competitive utility and safety services.*

b. Summary of Audit Activities

We sought to determine whether:

- Any holding company RCBS employee was provided to the utility as an employee, consultant, or independent contractor for the performance of non-competitive utility and safety services
- Any sharing of employees or assets between the utility and a holding company RCBS engaged in the merchant function occurred during the audit period.

We requested and analyzed information from the utility identifying which, if any, employees of affiliates (other than a service company and the holding company) provide non-competitive utility and safety services.

c. Findings

The current Compliance Plan summarizes this provision, and notes that all but one of ACE's retail affiliates (Atlantic Southern Properties, Inc.) offers at least one of the services that the Standards address in this area. In the Plan, management states that ACE and its retail affiliates employ none of the same individuals through any employment or consulting/contracting method.

We asked management about employee and asset sharing between ACE and affiliates during the audit period. Management told us that there was no employee sharing. To the extent that any employees from an affiliate were simultaneously engaged in the provision of utility and safety services, apart from shared administration and overheads, those would have been employees of DPL or Pepco, not from a retail affiliate.

Other than the use of rental space at the Mays Landing building (owned by an affiliate - - Atlantic Southern Properties) no assets have been simultaneously used by the utility and an affiliate.

Millennium is a holding company RCBSs under the Standards. Millennium's employees provided non-competitive utility and safety (meter-reading) services, through their role as employees of the contractor who provided infrastructure services to the utility.

d. Conclusions

86. Apart from Millennium, whose status has been addressed by the Board, there was no sharing of employees or assets covered by this provision of the Standards.

87. The Compliance Plan adequately addresses Section 14:4-3.5(p) of the Standards.

e. Recommendations

We have no recommendations regarding this requirement of the standards.

17. Common Directors and Officers

a. Statement of Applicable Requirements

Section 14:4-3.5(q) of the Standards provides that:

An electric and/or gas public utility and the PUHC or related competitive business segments of its public utility holding company shall not have the same persons serving on the Board of Directors as corporate officers, except for the following circumstances:

1. *In instances when these standards are applicable to public utility holding companies, any board member or corporate officer may serve on the holding company and with either the electric and/or gas public utility or a related competitive business segment of the public utility holding company, but not both the electric and/or gas public utility holding company and a related competitive business segment of the public utility holding company.*
2. *Where the electric and/or gas public utility is a multi-state utility, is not a member of a holding company structure, and assumes the corporate governance functions for the related competitive business segments, the prohibition against any board member or corporate officer of the electric and/or gas public utility also serving as a board member or corporate officer of a related competitive business segment shall only apply to related competitive business segments operating within New Jersey.*
   i. *In the case of shared directors and officers, a corporate officer from the electric and/or gas public utility and holding company shall verify, subject to Board approval, in the electric and/or gas public utility's compliance plan required pursuant to N.J.A.C. 14:4-3.7(a) through (d), the adequacy of the specific mechanisms and procedures in place to ensure that the electric and/or gas public utility is not utilizing shared officers and directors in violation of the Act or this subchapter.*

b. Summary of Audit Activities

We requested a list of Directors and Officers for each company in addition to asking for any information on any position changes that were made during the audit period. We also reviewed the Compliance Plan.

c. Findings

The Plan interprets this portion of the Standards as follows:

- Prohibiting ACE and "Retail Affiliates from having the same persons serving on the Board of Directors as corporate officers"
- "Other than with respect to shared services positions permitted under Section 3.5(i) and (j) (and the definition of "shared services") of the Standards, the Company does not have any persons serving on the Board of Directors of both the Company and any Retail Affiliate, who are also serving as corporate officers of the Company"
- And, via a footnote, that management "believes the shared services exemption applies to this prohibition on Board of Directors members serving as Company corporate officers. Accordingly, management believes a fair reading of the Standards would allow the chief financial officer, corporate secretary, treasurer, controller or general counsel, as shared services positions, to serve on the Company's Board of Directors, as well as the boards of directors of Retail Affiliates.

The Plan states that ACE is in compliance with this section of the Standards, and includes (and has historically included) the required signed certifications, verifying, in the words in the Standards, that it is "not utilizing shared officers and directors in violation of the Act or this subchapter." We do not agree with this interpretation; the Standards indicate the no person can simultaneously serve as an officer or director of:

- ACE and an RCBS
- ACE, a holding company, and an RCBS.

We requested a list of every corporate entity's directors and officers, and the date and nature of each change during the EDECA audit period. The following table summarizes individuals who, as of January 1, 2018, were in one of the two categories described above:

Common Officers

Common Officer	ACE	Pepco Holdings	Exelon Corporation	Atlantic Southern Properties Role	Constellation Energy Gas Choice, LLC	Constellation Energy Power Choice, LLC	Constellation NewEnergy Gas Division, LLC	Constellation NewEnergy, Inc	Constellation Solar New Jersey II, LLC	Constellation Solar New Jersey III, LLC	Constellation Solar New Jersey, LLC	W.A. Chester
1	Assistant Treasurer	Assistant Treasurer	SVP Finance, Treasurer	Treasurer	Treasurer	Treasurer	Treasurer	Treasurer	Treasurer	Treasurer	Treasurer	Assistant Treasurer
2	Assistant Treasurer	Assistant Treasurer	Assistant Treasurer	Assistant Treasurer	Assistant Treasurer	Assistant Treasurer	Assistant Treasurer	Assistant Treasurer	Assistant Treasurer	Assistant Treasurer	Assistant Treasurer	Assistant Treasurer
3	Assistant Treasurer	Assistant Treasurer		Assistant Treasurer								
4	Assistant Secretary	Assistant Treasurer	Assistant Secretary	Assistant Secretary	Assistant Secretary	Assistant Secretary	Assistant Secretary	Assistant Secretary	Assistant Secretary	Assistant Secretary	Assistant Secretary	Assistant Secretary
5	Assistant Secretary	Assistant Treasurer	Assistant Secretary	Assistant Secretary	Assistant Secretary	Assistant Secretary	Assistant Secretary	Assistant Secretary	Assistant Secretary	Assistant Secretary	Assistant Secretary	Assistant Secretary
6	Assistant Secretary	Assistant Treasurer	Assistant Secretary	Assistant Secretary	Assistant Secretary	Assistant Secretary	Assistant Secretary	Assistant Secretary	Assistant Secretary	Assistant Secretary	Assistant Secretary	Assistant Secretary

Similar such instances occurred earlier in the audit period; we have chosen not to enumerate them here due to the significant changes in the roster of ACE's RCBSs and the change in personnel that has rendered some of them no longer active. These occurrences are not unusual given management's interpretation of this portion of the Standards.

d. Conclusions

88. ACE was not in compliance with Section 14:4-3.5(q) of the Standards during the audit period. *(See Recommendation #9)*

In 2017 one individual served simultaneously as an officer of both ACE and an RCBS and five individuals served simultaneously as officers of ACE, Exelon, and several RCBs. Similar such occurrences existed in the other years of the audit period. Management interprets the Standards to allow such sharing due to Shared Services exemptions. We disagree with this interpretation, as the Standards do not include such exemptions in this section, though they are explicitly mentioned in other areas, suggesting no intent for an exception to be made with respect to Section 14:4-3.5(q).

89. The Compliance Plan does not adequately address Section 14:4-3.5(q) of the Standards. *(See Recommendation #10)*

The Compliance Plans in effect during the audit period include management's opinion that a Shared Services exemption can be applied to this portion of the Standards. The mis-application of an exemption that is not called for underpins ACE's non-compliance.

e. Recommendations

9. Reposition the duties of the individuals who serve as an Officer for ACE and Exelon Corporation and ACE, Exelon Corporation, and an RCBS. *(See Conclusion #88)*

10. Revise the Compliance Plan such that it properly interprets Section 14:4-3.5(q) of the Standards. *(See Conclusion #89)*

18. Employee Transfers

a. Statement of Applicable Requirements

Section 14:4-3.5(r) of the Standards provides that:

All employee transfers between an electric and/or gas public utility and its PUHC or related competitive business segments of its public utility holding company providing or offering competitive services to retail customers in New Jersey which are engaged in offering merchant functions and/or electric related services or gas related services shall be consistent with following provisions:

1. *The electric and/or gas public utility shall make a public posting of all employee transfers within three working days.*
2. *An electric and/or gas public utility shall track and report annually to the Board all employee transfers between the electric and/or gas public utility and such related competitive business segments of its public utility holding company.*
3. *Once an employee of an electric and/or gas public utility is transferred to such related competitive business segment of its public utility holding company, said*

employee may not return to the electric and/or gas public utility for a period of one year, unless the related competitive business segment of the public utility holding company to which the employee is transferred goes out of business or is acquired by a non-affiliated company during the one-year period.

4. *In the event that an employee is returned to the electric and/or gas public utility, such employee cannot be transferred for employment by a related competitive business segment of the public utility holding company which is engaged in offering merchant functions and/or electric-related services or gas-related services for a period of one year.*

b. Summary of Audit Activities

This provision limits the competitive impact on unaffiliated suppliers of utility employee movement from or to the PUHC or an RCBS. Should transfers occur, the provision makes them transparent to regulators and competitors. These limitations prevent a PUHC or RCBS from gaining competitive advantage through inappropriate transferring of employees to or from the public utility. Advantages could be gained in the following manners:

- Frequent transfer of employees with special expertise or knowledge
- Joint use of employees with special expertise or knowledge
- Transferring employees utilizing knowledge or transporting information gained at the utility for the benefit of the PUHC or related competitive business sector or vice versa.

We sought to determine if employee transfers from ACE to a holding company or holding company RCBS occurred during the audit period. Such transfers require ACE to publicly post these within the three working day period. Had such transfers occurred, we would then seek to determine if any transferring employee was provided proper instructions on the employee's use of retained information. We also determined if ACE made any required annual filing of employee transfer information with the Board.

In addition, we sought to verify whether any employee that did transfer from ACE to the holding company or holding company RCBS and vice-versa met the one-year requirement on transferring back to the previously held job at the affected entity. As a part of this evaluation we would confirm whether any such employees were properly instructed on confidential, competitively-restricted information prior to and after the transfer.

c. Findings

There were no employee transfers to/from ACE or an RCBS as envisioned by Section 14:4-3.5(r) of the Standards during the audit period. Management made annual filings to the Board on this matter during the audit period, each noting the lack of any applicable transfer. The Compliance Plan recites this provision of the Standards, and notes that all but one of the RCBSs offer one or more of the services covered by this section of the Standards. The ACE web site includes a "public postings" page: https://www.atlanticcityelectric.com/Pages/PublicPostings.aspx, but as no such transfers occurred during the audit period, none would have been necessary. We observed no such postings during our audit field work.

d. Conclusions

90. ACE made required reports annually about employee transfers during the audit period.

91. No applicable transfers occurred during the audit period, therefore there was no need for the posting of employee transfers as required by Section 14:4-3.5(r) of the Standards.

92. The Compliance Plan adequately addresses Section 14:4-3.5(r) of the Standards.

e. Recommendations

We have no recommendations regarding this area of the Standards.

19. Use of Utility Information after Employment Transfers

a. Statement of Applicable Requirements

Section 14:4-3.5(s) of the Standards provides that:

> *Employees transferring from an electric and/or gas public utility to a related competitive business segment of the public utility holding company are expressly prohibited from using any information gained from the electric and/or gas public utility to the benefit of the related competitive business segment of the public utility holding company or to the detriment of other unaffiliated product and/or service providers.*
>
> *1. Any electric and/or gas public utility employee hired by a related competitive business segment of the public utility holding company shall not remove or otherwise provide information to said affiliate which said related competitive business segment of the public utility holding company would otherwise be precluded from having pursuant to these standards.*
>
> *2. An electric and/or gas public utility shall not make temporary or intermittent assignments, or rotations to related competitive business segments of its public utility holding company.*

b. Summary of Audit Activities

The first provision prohibits inappropriate use of utility information by transferred employees. The second prohibits rotations that would have the effect of making such information available without permanent transfer. As a threshold matter, we first sought to determine if employee transfers from the utility occurred during the audit period. We reviewed utility employment practices, and analyzed severance or exit procedures used when an employee transfers to an affiliated company. We also inquired whether any public utility employees were provided temporary or intermittent jobs with the holding company or holding company RCBS. We reviewed the utility compliance plan and examined information concerning temporary assignments, transfers, and rotations.

c. Findings

Management reports that there were no temporary employment or temporary assignments involving ACE personnel and an affiliate during the audit period. The Plan adequately summarizes this portion of the Standards, and includes discussion of the employee training associated with FERC and Code of Conduct Standards. It further notes that ACE will make no assignments of the type that this portion of the Standards addresses. Management's comments on a draft of this report noted that, in October 2019, employees of PHI's regulated utilities, including ACE, were required to receive training on affiliate regulations and relationships.

d. Conclusions

93. There were no audit-period transfers that this provision restricts.

94. ACE has reasonable controls in place to prevent prohibited transfers of information.

95. The Compliance Plan adequately addresses Section 14:4-3.5(q) of the Standards.

e. Recommendations

We have no recommendations regarding the requirements of this provision.

20. Service Transfers

a. Statement of Applicable Requirements

Section 14:4-3.5(t) of the Standards provides that:

All transfers of services not prohibited by these standards shall be subject to the following provisions:

1. *Transfers from the electric and/or gas public utility to a related competitive business segment of its public utility holding company of services produced, purchased or developed for sale on the open market by the electric and/or gas public utility will be priced at no less than the fair market value.*
2. *Transfers from a related competitive business segment of the public utility holding company to the electric and/or gas public utility of services produced, purchased or developed for sale on the open market by the related competitive business segment of the public utility holding company shall be priced at no more than fair market value.*
3. *Prices for services regulated by a state or Federal agency shall be deemed to be the fair market value.*
4. *Services produced, purchased or developed for sale on the open market by the electric and/or gas public utility shall be provided to related competitive business segments of its public utility holding company and unaffiliated company(ies) on a nondiscriminatory basis, except as otherwise required or permitted by these standards or applicable law.*
5. *Transfers of services not produced, purchased or developed for sale on the open market by the electric and/or gas public utility from the electric and/or gas public utility to related competitive business segments of its public utility holding company shall be priced at fully allocated cost.*
6. *Transfers of services not produced, purchased or developed for sale on the open market by a regulated competitive business segment of the public utility holding company from that related competitive business segment of the public utility holding company to the electric and/or gas public utility shall be priced at the lower of fully allocated cost or fair market value.*

These provisions require that:

- "Open market" services the utility provides to an RCBS of the PUHC are priced at no less than fair market value and are provided on a nondiscriminatory basis (note that regulated services are at fair market value)
- "Open market" services an RCBS of the PUHC provides to the utility are priced at no more than fair market value (note that regulated services are at fair market value)
- "Non-open" market services the utility provides to an RCBS of the PUHC are priced at fully allocated cost
- "Non-open" market services an RCBS of the PUHC provides to the utility are priced at the lower of fully allocated cost or fair market value.

b. Summary of Audit Activities

The provision of and charging for common services falls among the topics addressed in our companion reporting on our examination of *Cost Allocation Methods* (see Chapter IV). While electric and gas utilities typically perform meter reading using internal resources, a joint venture between PHI and South Jersey Industries (SJI), Millennium Account Services (MAS), conducts these activities for ACE and South Jersey Gas. This relationship has been reviewed in several previous EDECA and management audits done on behalf of the Board.

c. Findings

The most recent contract for MAS' provision of these services results from a 2012 solicitation. The following portions of the Standards are relevant in assessing the pricing provisions in this contract:

- *14:4-3.5(t)2. Transfers from a related competitive business segment of the public utility holding company to the electric and/or gas public utility of services produced, purchased or developed for sale on the open market by the related competitive business segment of the public utility holding company shall be priced at no more than fair market value;*
- *14:4-3.5(t)6. Transfers of services not produced, purchased or developed for sale on the open market by a related competitive business segment of the public utility holding company from that related competitive business segment of the public utility holding company to the electric and/or gas public utility shall be priced at the lower of fully allocated cost or fair market value.*

Section t(2) of the Standards should be read to say that, with respect to meter reading services provided by MAS to ACE, pricing should be at "no more than fair market value." Sub-section t(6) should be read to say that pricing for these services should be at the lower of fully allocated cost or fair market value.

The most recent solicitation for these services pre-dates our audit period, and was reported on in a previous management audit of MAS' co-owner, South Jersey Gas. That audit noted a lack of significant bidder participation in previous requests for proposals issued for ACE/SJG meter reading services:

- 2006: one non-affiliated bidder

- 2012: three non-affiliated bidders.

As MAS's bid was the lowest priced bid and was accepted for these services. This provides an indicator of market value and therefore compliance with the Section t(2). In its response to the previous management audit, ACE argued that due to its compliance with Section t(2) of the Standards and the fact that the pricing for these services resulted from a competitive solicitation, prices were, in the language of the Standards "produced, purchased or developed for sale on the open market by a related competitive business segment" and therefore t(2) is the applicable standard to apply, not t(6).

The previous management audit of ACE recommended that, as part of its next rate proceeding, management "provide testimony and updated cost-benefit information demonstrating that MAS provides a net savings to ACE compared with the cost of ACE providing its own meter reading." Both ACE and South Jersey Gas subsequently provided documentation in rate cases before the Board which demonstrate the cost differential in the pricing in contracts with MAS and the costs that would be incurred by reading meters with internal resources.

Somewhat dated, they were produced to support a previous audit recommendation. However, this ACE analysis, most recently performed in 2011, demonstrated that ACE paid less on per-read basis to MAS than it would using internal resources. The Board accepted the results of this filing in both its closure of the management audit recommendation and in the settlement of the relevant ACE rate case. The price paid per read by ACE to MAS has not changed substantially since that 2011 analysis: per read costs for 2010 and 2011 of $0.553 are as of 2017 (and 2018) $0.58; a growth rate 4.9% over that period.

When compared to the 2010 and 2011 internal price calculated by ACE of $0.881 and $0.956 respectively, the justification accepted by the Board at that time would still likely be true, as even though dated, an internal cost reduction of 39 percent would have to be achieved in order to bring the internal cost into parity with 2017/2018 contract pricing. Filings by SJG in more recent rate cases (2017 for example) indicate similar savings in MAS pricing versus what SJG would internally charge.

d. <u>Conclusions</u>

96. The compliance plan adequately addresses this portion of the Standards.

97. Future actions regarding any modification, extension, changed in pricing terms, or types or levels of services should require Board approval. *(Recommendation #11)*

Various factors are important to consider regarding the future of not only the current ACE-MAS contract but its relationship moving forward - - included are implications beyond those surrounding compliance with the Standards. The concept of sharing meter reading services between separate electric and gas utilities with similar geographic service territories introduces the opportunity for economies of scale. But good practice means that the competitiveness of the current contract, now in its sixth year, should be tested by the market in another solicitation. However even this solution presents present-day challenges, as there does not exist a deep pool of competitive suppliers for these services.

But of equal importance are the future needs of ACE, and SJG, for the services that MAS provides them. As ACE explores the implementation of automated meters, the need for the types and level of service from MAS will potentially change. The fact that MAS is co-owned by a separate New Jersey utility means SJG's exploration of smart meter implementation, which may or may not occur at the same time, or on the same schedule as ACE, creates a situation where two separate high-level initiatives could impact the future viability of MAS. The reduced need for meter readers at one or both utilities will be fundamental elements of the future of MAS - - and the arrangement whereby an affiliate whose future hinges on the provision of these future services must be evaluated on the basis of how best ACE (and customers) should be served with respect to these services. ACE must contemplate this in its future plans, and any such internal evaluations and Board filings should include a full consideration of the future of not only this (or any other) contract between it and MAS, but also MAS' future role more globally.

e. Recommendations

11. Require Board approval for future actions regarding any modification, extension, changes in pricing terms, or types or levels of services for the services provided by MAS, and include in them analysis demonstrating how such actions comply with Section 14:4-3.5(t)2 and 14:4-3.5(t)6 of the Standards. *(See Conclusion #97)*

Whether the current MAS contract continues to toll or a new contract is sought, any change in terms, including price, should be approved by the BPU before being finalized, so that the full range of considerations regarding the ACE-MAS relationship and its future can be evaluated. This approval should include valuations that consider:

- ACE's future meter reading needs in light of future potential automated metering initiatives
- Whether those needs are best met through services provided by an affiliate or through in-house personnel
- A new solicitation for either current services or future services and how that should be issued and managed
- What impact events at South Jersey Gas introduce
- How in the interim, and in any new agreements, compliance with both Sections t(2) and t(6) of the Standards will be met, including ACE demonstrations of both (a) the price differential of MAS (or another competitor) vs. in house and (b) performance of a fully-allocated cost comparison.

Inclusion of these elements will permit a full review by the Board.

Combining the fact that no other entity except MAS has provided these services to ACE in the past, that contracts with MAS have been continually renewed, and that previous solicitations have not seen robust participation from market participants, we consider that additional scrutiny should be applied to the consideration of this contract's compliance with the Standards. As these circumstances question the true nature of whether Section t(2) of the Standards - - "*purchased or developed for sale on the open market* - - is actually being met, subsequent evaluations of any relationship between ACE and MAS should include both a comparison versus providing services through utility personnel, and versus the fully-allocated cost of MAS' provision of these services and the cost charged in any agreement.

21. Utility Asset Transfers

a. Statement of Applicable Requirements

Section 14:4-3.5(u) of the Standards provide that:

All transfers, leases, rentals, licenses, easements or other encumbrances of utility assets to a PUHC or related competitive business segments of a PUHC not prohibited by these standards shall be subject to the following pricing provisions, consistent with all other applicable Board rules:

1. *Transfers, leases, rentals, licenses, easements or other encumbrances of utility assets from the electric and/or gas public utility to a related competitive business segment of its public utility holding company shall be recorded at fair market value or book value as determined by the Board.*
2. *Transfers, leases, rentals, licenses, easements or other encumbrances of assets from a related competitive business segment of the public utility holding company to the electric and/or gas public utility shall be recorded at the lesser of book value or fair market value.*

These provisions address the pricing of assets transferred between affiliates, and generally require asymmetric pricing:

- Transfers from the utility to a PUHC RCBS are to be priced and recorded at fair market value or book value as determined by the Board.
- Transfers from a PUHC RCBS to the utility are to be priced at the *lesser* of book or fair market value.

b. Summary of Audit Activities

We sought information from ACE regarding asset transfers, leases, rentals, easements and other encumbrances through data requests. Specifically, we asked ACE to:

- Identify and describe each asset transfer from the regulated utility to each of the unregulated affiliates (and from each unregulated affiliate to the regulated utility) during the audit period
- List all asset leases and rentals between the regulated utilities and the unregulated affiliates of the parent/holding company
- List all licenses, easements, or other encumbrances of utility assets between the regulated utilities and the unregulated affiliates of the parent/holding company.

c. Findings

No asset transfers - - either from ACE to affiliates or affiliates to ACE - - occurred during the audit period. Nor were there any audit period transfers of intellectual property. We requested copies of all leases and rentals between affiliated entities during the audit period. Management identified two such leases, only one of which involved ACE. Atlantic Southern Properties, a holding Company RCBS owns the Mays Landing, NJ regional office and leases a portion of this property to ACE. A recommendation from the previous audit required ACE to pay the lower of cost versus market rates for its rental of space at this facility.

To comply with this recommendation, management has solicited annual surveys of market prices for office space in the geographic area near and around Mays Landing. The recommendation went on to require ACE to document any difference between the market price for office space in the local market area and what ACE pays Atlantic Southern Properties per its lease agreement; in the event that what ACE pays exceeds this market-based proxy (thus placing the agreement in violation of this portion of the Standards). We reviewed the annual surveys management uses to provide for a comparable "market price". Management provided support showing ACE's cost per square foot for rent at the Mays Landing building in multiple rate filings before the BPU. These filings showed that for all years covered, ACE's cost fell below the market proxy price, thus no adjustment was necessary during the audit period.

The Compliance Plan recites this provision and states that management will comply with the two pricing revisions contained in items (1) and (2) of this portion of the Standards. We requested copies of all policies, rules, procedures, practices, etc. that govern how management determines prices for the provision/transfer of assets among ACE (and the other PHI utilities) and affiliates. Management reported that ACE's Cost Accounting Manual (CAM) contains corporate (PHI-level) policies governing these matters. Attachment 6 of the CAM discusses the pricing of these types of transfers; because the CAM is a PHI-wide document, separate discussion is included for the rules and regulations in the four jurisdictions: D.C., Delaware, Maryland, and New Jersey, and also relevant FERC rules. The New Jersey portion of this material includes the language from the Standards. The Plan makes no reference to intellectual property.

Management reported that there were no licenses, easements or other encumbrances of utility assets between ACE and an RCBS during the audit period.

d. Conclusions

98. There have been no asset transfers, asset leases, or assets rentals between ACE and an RCBS during the audit period.

99. There were no reported licenses, easements or other encumbrances of utility assets between ACE and an RCBS during the audit period.

100. ACE's lease with Atlantic Southern Properties is in compliance with this portion of the Standards. *(See Recommendation #12)*

Management should continue the process of using external sources to develop a comparable market price that ACE pays for its lease in the building owned by its affiliate.

101. The Compliance Plan adequately addresses Section 14:4-3.5(u) of the Standards, except for intellectual property. *(See Recommendation #13)*

e. Recommendations

12. Continue soliciting market information and make subsequent pricing adjustments to ensure that ACE's Mays Landing lease complies with Section 14:4-3.5(u) of the Standards. *(See Conclusion #100)*

13. Make explicit the Compliance Plan's inclusion of intellectual property in asset transfer provisions and provide a sufficient explanation of what is covered to put all employees on notice of the types of intangible property that is covered. *(See Conclusion #101)*

I. Utility RCBS Standards (Section 14:4-3.6)

Section 14:4-3.6 of the Standards applies to any competitive services offered by the utility or a related competitive business segment of the utility.

1. Statement of Applicable Requirements

Section 14:4-3.6 of the Standards provides that:

> *Competitive products and/or services offered by a utility or related competitive business segments of a utility…* [several pages of associated requirements and prohibitions follow]

2. Findings

This section of the standards does currently not apply to ACE, as it offers no competitive services. The Compliance Plan addresses this section of the Standards.

3. Conclusions

102. ACE has no internal RCBS nor does it provide any competitive service.

103. The Compliance Plan adequately addresses Section 14:4-3.6 of the Standards.

4. Recommendations

We have no recommendations regarding the requirements of this provision.

J. Regulatory Oversight (Section 14:4-3.7)

Section 14:4-3.7 of the Standards applies to the annual filing requirements for the Compliance Plan, its contents, and audits of compliance with the Plan.

1. Statement of Applicable Requirements

Section 14:4-3.7 of the Standards provides that:

> *(a) Each electric and/or gas public utility shall file its compliance plan with the Board and provide a copy of said plan to the Rate Counsel at least once in every 12-month period or upon changes to the plan, and thereafter, within 12 months of the revised plan.*
> *(b) Said compliance plan shall demonstrate that there are adequate procedures in place to ensure compliance with this subchapter and shall include the electric and/or gas public utility's dispute resolution procedure pursuant to N.J.A.C.*

14:4-3.8(a).

1. *Said compliance plan shall contain an accurate list of all affiliates of an electric and/or gas public utility, including the business name and address, name and business telephone number of at least one officer of each affiliate and a brief description of the business of each affiliate.*
   i. *The information required by (b)l above shall be updated within five business days of any change(s) thereto, and a public posting of the information shall also be made within that time period.*

(c) Absent Board action to the contrary, the electric and/or gas public utility's compliance plan shall be in effect between its filing and the Board's decision.

(d) Upon the creation of a new affiliate that is covered by this subchapter, the electric and/or gas public utility shall immediately notify the Board, as well as make a public posting thereof.

(e) Every two years, or more often at the discretion of the Board, the electric and/or gas public utility shall have an audit prepared by an independent auditor, to be selected by the Board, which verifies that the electric and/or gas public utility is in compliance with this subchapter.

1. *The scope of the audit shall be established by the Board and shall take into consideration the electric and/or gas public utility's level of activity with its affiliates.*

(f) An audit performed by an independent auditor shall be at the electric and/or gas public utility's expense.

2. *Findings*

As noted in Section A. *Chapter Summary*, of this report, ACE made the required annual Compliance Plan filings. Our review of the Plans in effect during the audit period found them to be reasonably complete and consistent with the intent of the Standards. The Compliance Plan summarizes this portion of the Standards.

3. *Conclusions*

104. The Compliance Plan adequately addresses this Section 14:4-3.7 of the Standards.

4. *Recommendations*

We have no recommendations regarding the requirements of this provision.

K. Dispute Resolution (Section 14:4-3.8)

1. *Statement of Applicable Requirements*

Section 14:4-3.8 of the Standards provides that:

(a) An electric and/or gas public utility shall establish and file annually with the Board a dispute resolution procedure, including the establishment of a telephone complaint hotline, to address complaints alleging violations of this subchapter.

1. *The procedure shall be included in the electric and/or gas public utility's annual compliance plan.*

> *(b) At a minimum, the procedure shall designate a person to conduct an investigation of the complaint and communicate the results of the investigation to the complainant in writing, within 30 days after the complaint is received, including a description of any action taken.*
> *(c) An electric and/or gas public utility shall report any violation of this subchapter to the Board, with a copy provided to the Rate Council within five business days of becoming aware of any such violation(s).*
> *(d) The electric and/or gas public utility shall maintain a log of all resolved and pending complaints. The log shall be subject to review by the Board and Rate Counsel and shall contain, at minimum, a summary of the complaint, the manner in which the complaint was resolved, or an explanation why the complaint remains pending.*

2. *Findings*

The current version of the Plan responds to each of the four items listed under this provision of the Standards. The information is in all cases responsive to what the Standards prescribe with respect to this issue.

3. *Conclusions*

105. The Compliance Plan adequately addresses this Section 14:4-3.8 of the Standards.

4. *Recommendations*

We have no recommendations regarding the requirements of this provision.

L. Violations and Penalties (Section 14:4-3.9)

1. *Statement of the Applicable Requirements*

Section 14:4-3.9 of the Standards provides that:

> *(a) If, as a result of an audit conducted pursuant to N.J.A.C. 14:4-3.7(e) through (g) or by any other means, the Board determines that an electric and/or gas public utility has committed violations of N.J.A.C. 14:4-3.3, 3.4, 3.5, 3.7 or 3.8, which are not substantial violations as described in (b) below, the Board is authorized to impose a penalty of up to $ 10,000 for each such violation upon said electric and/or gas public utility.*
> *(b) If, as a result of an audit conducted pursuant to N.J.A.C. 14:4-3.7(e) through (g) or by any other means, the Board determines, after providing the electric and/or gas public utility notice of a public hearing and an opportunity to be heard, that an electric and/or gas public utility has committed violations of N.J.A.C. 14:4-3.3, 3.4, 3.5, 3.7 or 3.8, which are substantial in nature so as to result in unfair competitive advantages for an electric or gas public utility, the Board is authorized to take some or all of the following actions:*[a list of several follows]

2. *Findings*

The current version of the plan includes a statement by management that they are aware of the Board's ability to take action as described in the Standards and that fiscal penalties for violations are a potential course of action.

3. Conclusions

106. The Compliance Plan adequately addresses this Section 14:4-3.9 of the Standards.

4. Recommendations

We have no recommendations regarding the requirements of this provision.

Chapter VIII: Merger Conditions Table of Contents

Chapter VIII: Merger Conditions

A. Chapter Summary

The Exelon/PHI merger closed on March 23, 2016. The regulatory approvals preceding merger close incorporated many commitments agreed to by Exelon and PHI (we refer frequently to pre-merger PHI as "***Old PHI***") to secure merger approval. This chapter generally refers to post-merger PHI as "***PHI LLC***." We examined compliance with the approximately 100 separate commitments, some of them with multiple parts, applicable here. Some of those commitments are self-executing and some required only one-time action. However, most of them involve ongoing or periodic actions to ensure continuing compliance indefinitely into the future.

Our review of compliance activities undertaken to achieve compliance and the circumstances or conditions resulting shows complete fulfillment of commitments requiring one-time actions. Exelon, PHI LLC, and ACE have undertaken well-organized, properly tracked, and almost universally compliant actions so far to meet commitments requiring ongoing activity or the continuation of certain prescribed conditions or circumstances. A table at the end of this chapter summarizes compliance activities and status. It notes those that continue indefinitely.

A central set of commitments regarding the ***Special Purpose Entity and Golden Share*** exist to insulate ACE and PHI LLC from the consequences of financial distress in other sectors of the Exelon family, or at the holding company itself. We found compliance with commitments addressing special purpose entity (PH Holdco LLC, or "the SPE") ownership, governance structure, capitalization, required consents to bankruptcy and other insolvency actions, separation, accounting, and arm's-length dealing. The circumstances and conditions that now exist meet those required for compliance. However, in certain cases, the ability to change those circumstances in the future without notice or approval can create conditions or circumstances either out of compliance, or not in keeping with what we view as the intent of certain commitments. These instances are:

- No. 32: *Ownership* of SPE: SPE ownership now conforms to requirements, but governing documents do not foreclose a troublesome change. Creditors of Exelon could take ownership and control of EEDC, the entity holding Exelon's interest in the SPE. Exelon should acknowledge that the merger commitments prohibit, absent prior BPU approval, any EEDC transfer of its interests, even if all SPE directors and the Golden Share Holder consent to such a transfer.
- No. 36: SPE Directors: SPE directors have met requirements so far, but governing documents allow former officers of Exelon or other Exelon affiliates above or outside the EEDC line of ownership to become independent directors. The SPE Operating Agreement should undergo amendment to preclude expressly service by such persons as SPE independent directors.
- No. 37: Golden Share: A generally appropriate structure exists with respect to the Golden Share and its holder. Moreover, Exelon has secured the services of an industry-leading firm to serve. However, nothing expressly provides the Golden Share Holder appropriate guidance in a number of areas central to making its votes or consents effective in times of severe Exelon financial distress. Examples of the failure of material, documented direction and guidance to exist include: (a) definitions and

descriptions duties, perspectives, and interests to be protected, and (b) guidance on keeping utility operating entities free of bankruptcy entanglement. The Golden Share Holder at present has the freedom to exercise pertinent powers using standards - - and what those standards may be will likely remain non-transparent until after an exercise that may place protected entities into bankruptcy or insolvency. Consensus among stakeholders should be sought regarding the provision of expressly stated substance to the role of the Golden Share Holder when exercised in times of great financial distress and likely uncertainty. The results should become embodied in enforceable governance documents explaining the standards, interests, and other parameters that should guide Golden Share Holder decisions - - governance that should require BPU approval before change.

- No. 37: Golden Share: We did not find among the entities and individuals associated with the Golden Share material financial connections to Exelon or to any of its affiliates, but nothing prohibits them. An explicit prohibition should bar material economic or financial interests by all entities and individuals associated with Golden Share holding.
- No. 38: PHI Board of Directors - - PHI board membership has conformed to the requirements of this Commitment, but governing documentation do not prohibit dilution of independent membership through the addition of new members. The board should remain at seven members, while retaining the four geographically oriented independent directors.
- No. 39: Consents to SPE Bankruptcy: The applicable governing documents require Golden Share Holder consent for voluntary SPE and PHI bankruptcy filings. However, if the Golden Share Holder agrees, amendments can eliminate the requirement of such consent. Bankruptcy consent forms a central part of the ring-fencing merger commitments. The protections should not be subject to elimination, whether or not the Golden Share Holder consents. The material and required consent to eliminating them should be that of the BPU, made an otherwise unalterable part of the governing documents.

Ongoing ***Utility Financial Separation*** commitments form another important source of ring-fencing. We found compliance with debt-related commitments that seek to preclude ACE responsibility for acquisition debt, require credit ratings for PHI, and prevent PHI and SPE responsibility for or cross defaults from affiliates’ debts. This group of commitments also includes funds transfer limitations by the SPE, money pool limitations, dividend restrictions, and equity maintenance. The entities these commitments involve have complied with them.

A number of commitments address the ongoing ***Structure*** of Exelon, PHI Service Company (PHISCo) and ACE. We found compliance with requirements that address corporate separateness, including the SPE, existing to protect PHI LLC and ACE in the event of severe financial distress elsewhere in the Exelon family of companies. We also found compliance with commitments to preserve PHI LLC management authority and separateness, and to continue the existence of PHISCo and its provision of designated services. Exelon has also complied with requirements to hold board of director and executive committee meetings in New Jersey on occasion.

We also found compliance with two ongoing ***Reliability*** commitments - - progress toward 2020 SAIFI and CAIDI targets and continuation of the Reliability Improvement Plan. We also found compliance with ongoing ***Operations*** commitments. This group includes headquarters location, the authority levels of PHI LLC officers, employment issues (bargaining agreements, hiring, attrition, development, and outplacement), charitable and community engagement, and supplier diversity. Another group of ongoing operational commitments addresses ***Customer Service***. We found compliance with commitments addressing improvement in customer service levels, low-income funding and assistance, and energy efficiency.

We found compliance with a group of ongoing ***Accounting and Rates*** commitments addressing merger acquisition premium and transaction costs, ACE books and records, non-recovery from customers of SPE and Oracle conversion costs, and the required capital structure for rate filings. Another grouping of ongoing commitments address ***Affiliates*** issues. We found compliance with a series of narrow requirements addressing notice of federal audits, rate treatment of Exelon Business Services Company, LLC (EBSCo) assets used to serve ACE, General Services Agreement Execution, and transfer of non-utility PHI LLC subsidiaries to Exelon. Chapters IV and VII of this report address affiliate relationships and transactions and EDECA requirements in detail. Those chapters address any issues we found in those areas, thus substantially covering compliance with the merger commitments addressing affiliate requirement compliance and controls over affiliate charges.

Our principal merger commitments concern regarding affiliates arises from continuation of the pre-merger failure to maximize directly charged service company costs. We found substantial compliance with the requirement to provide access to books and records, but found that PHI LLC needs to secure prompter access to requests for Exelon information relevant to affiliate relationships and transactions involving PHI LLC and ACE. Another commitment requires that ACE retain, as we found it has, the right to opt out of services provided by EBSCo. The scope of the PHI LLC and ACE power to opt out, however, requires better definition.

The merger commitments impose a number of ***Reporting*** requirements. We found compliance with them, but have two specific concerns. First, we found reporting on ring-fencing, economic benefits, safety, and metrics reporting compliant. Exelon can and therefore should, however, provide reports on metrics at its other utilities as close to the end of the first quarter as possible, and not delay them until mid-year, as has occurred so far. We found merger tracking sufficient. Second, an Exelon officer has filed annual certifications, but they do not certify to past compliance, but state an intent to comply in the future - - which appears only to state an intent to do what is already required absent such certification.

The merger commitments also address ***Power Markets***. We found compliance with commitments addressing interconnection studies, remaining in PJM, a separate advocacy organization for Exelon's non-utility businesses, ACE/Pepco merger stipulation elements, market monitor review of PJM bids, and matters addressing distributed energy.

With respect to findings from the prior management audit, we did not find any questions about their implementation that remain material today.

B. Background

1. Sources of Merger Commitments

This chapter addresses compliance with the commitments (Commitments) incorporated into two BPU orders in Docket No. EM14060581 (*In the Matter of The Merger of Exelon Corporation and Pepco Holdings, Inc.*).

- March 6, 2015 Order Approving Stipulation of Settlement
- October 31, 2016 Order Approving Joint Recommendation for Settlement of the Most Favored Nation Issue.

The first of these orders approved the merger based on a Stipulation of Settlement supported by parties to the merger proceedings before the BPU. This order contained a Most-Favored-Nation (MFN provision) that required consideration of the comparability of commitments in New Jersey to those finally adopted by the public service commissions of other states having jurisdiction over the merger. The second order resolved MFN questions on the basis of a joint settlement recommendation supported by parties to the BPU proceedings addressing the merger.

The second, MFN order required additional commitments, and amended and superseded some. This chapter uses the numbering of the commitments of the Stipulation of Settlement preceding the first order and of the Joint Recommendation preceding the second, or MFN order.

2. Non-Continuing Commitments

The many commitments and their varying nature led us to categorize them for logical presentation and discussion in this chapter. We divided the Commitments into two overall groups - - those not requiring ongoing or continuing actions and those that do require ongoing actions that must continue into the future. The first group of non-recurring Commitments consists of two "no-action" types:

- Superseded Commitments - -the MFN Joint Settlement superseded some of the original, Stipulation of Settlement Commitments
- Self-Effectuating Commitments - - in some cases, agreement itself to the terms of the Stipulation of Settlement or the Joint Settlement was sufficient.

A third type of non-continuing Commitments consists of those satisfiable through one-time actions. We found all of them, as we discuss later in this chapter, to have been completed.

3. Ongoing Commitments

The remainder of the commitments address a variety of subjects - - many of them related. We have divided them for discussion purposes into the following categories:

- Exelon/PHI ***Structure***: PHI, PHISCo, and ACE positions in the overall Exelon corporate structure, and Exelon-level New Jersey meeting locations
- ***Special Purpose Entity*** Structure and Operations: SPE ownership, governance, separation, ring-fencing protections, and accounting
- ***Financial Separation***: debt ratings and financings, money pool, equity maintenance and dividend restrictions, and SPE asset pledges and funds transfers
- ***Reliability***: SAIFI/CAIDI targets and Reliability Improvement Plan Continuation

- ***Customer Service***: reporting, low-income assistance, and energy efficiency
- ***Operations***: headquarters location, charitable and community engagement, PHI officer authority
- ***Employment and Diversity***: workforce development, outplacement, supplier diversity, bargaining agreements, attrition, and hiring
- ***Accounting and Rates***: non-recovery of certain acquisition-related costs, books and records, and capital structure for rate cases
- ***Affiliates***: transfer of non-utility PHI subsidiaries, regulatory compliance, cost charging and allocations, EBSCo services and costs, and rate treatment of affiliate assets
- ***Reporting***: ring-fencing, annual certification, merger compliance tracking, economic benefits, safety, and utility metrics
- ***Power Markets***: interconnection, PJM memberships and operations, non-utility advocacy, and distributed energy.

The number and complexity of the many ongoing commitments also calls for a structured program for managing compliance. We therefore also examined how Exelon and PHI LLC track compliance.

4. Prior Audit Recommendations

This chapter also addresses the status of recommendations from the most recent audit similar to this one. The final report of the prior audit came some eight years ago. It offered 77 recommendations. ACE filed comments on that report on April 30, 2010, including descriptions of where it disagreed with the recommendations and how it proposed to address those with which it did agree. The BPU considered comments from Rate Counsel, and ACE, along with the views of its staff in issuing its Order of Implementation in Docket No. EA07100794, dated January 21, 2015. That order found that ACE had implemented all 54 recommendations remaining open, except for two. These two 3-1 and 3-2 remained subject to monitoring, evaluation, and modification, as necessary. The areas addressed by the other recommendations, all closed as having been addressed elsewhere, rendered unnecessary by outside events, or implemented by company action generally cover functions and activities addressed in this audit.

We believe that addressing such areas afresh, as this audit has done, is appropriate, given the eight years since the last report. However, the January 2015 order did leave two areas specifically open for continuing examination. We address both at the end of this chapter.

C. Self-Effectuating Merger Commitments

1. Findings

This group includes commitments that do not require action, or remain contingent on actions or circumstances not yet existing. Thus, future circumstances may require action, or cause non-compliance in the event of non-action. This group includes the following self-effectuating commitments:

- Stipulation of Settlement

- No. 4: PHI Money Pool Participation
- No. 6: Consolidated Tax Adjustment
- No. 27: Exelon Consent to BPU Jurisdiction
- No. 77: Access to EBSC Audit Reports
- No. 79: Notice of EBSC Regulatory Orders
- No. 83: 60-Day GSA Change Letters
- No. 84: Filings Seeking GSA Changes
- No. 85: BPU Review of GSA and Allocations

a. No. 4: PHI Money Pool Participation

Commitment No. 4 of the Stipulation of Settlement provides that:

> *The Signatory Parties agree it is in the public interest to authorize ACE to participate in the PHI money pool as more fully described in Paragraph 55.*

This commitment requires no implementing action; it merely authorizes ACE participation in the PHI money pool. See the discussion under Commitment No. 55, Money Pool Participation Limitations, for a discussion of efforts to comply with those limitations.

b. No. 6: Consolidated Tax Adjustment

Commitment No. 6 of the Stipulation of Settlement provides that:

> *The Signatory Parties agree the Joint Petitioners' request to be relieved from the application of a consolidated income tax adjustment in future ACE base rate proceedings has been addressed in I/MIO the Board's Review of the Applicability and Calculation of a Consolidated Tax Adjustment, BPU Docket No. EO12121772, Order Modifying the Board's Current Consolidated Tax Adjustment Policy, (dated October 22, 2014), and no further action is required in this proceeding.*

This Commitment requires no implementing actions. It merely recognizes that the tax adjustment issue has been addressed already.

c. No. 27: Exelon Consent to BPU Jurisdiction

Commitment No. 27 of the Stipulation of Settlement provides that:

> *Exelon submits to the jurisdiction of the Board of Public Utilities for: (a.) the enforcement of the commitments set forth herein; and (b.) matters relating to affiliate transactions between ACE and Exelon or its affiliates. Exelon will also cause each of its affiliates that supplies goods or services to ACE to submit to the jurisdiction of the New Jersey Board of Public Utilities for matters relating to the provision or costs of such goods or services to ACE.*

Many of the Commitments have been reduced to writing in some form. No documents define or explain the nature of this commitment. Counsel for Exelon explained that the consent is not intended to expand any enforcement powers available to the BPU under law, but simply to remove the ability of parent Exelon to argue that the BPU does not have jurisdiction over Exelon for purposes of exercising enforcement powers against Exelon, should the need arise.

We did not seek to determine whether this description conforms or not to the intent of those agreeing to the settlement. However, with this interpretation now offered by Exelon, the BPU and stakeholders can ponder the question of whether it conforms to their understanding of the intent and scope of this Commitment.

d. No. 77: Access to EBSC Audit Reports

Commitment No. 77 of the Stipulation of Settlement provides that:

> *ACE shall also provide copies to Board Staff and Rate Counsel of the portions of any external audit reports performed for EBSC pertaining directly or indirectly to Exelon's determinations of direct billings and cost allocations to ACE. Such material shall be provided no later than 30 days after the final report is completed.*

Management reports no external audit reports performed for EBSCo addressing direct billings and cost allocations to ACE since 2015. No occasion, therefore, has arisen for action under this Commitment.

e. No. 79: Notice of EBSC Regulatory Orders

Commitment No. 79 of the Stipulation of Settlement provides that:

> *ACE shall promptly notify the Board, Board Staff and Rate Counsel when it has received notice that the SEC, the FERC, or any state regulatory commission in which an affiliate utility company operates has issued a specific decision affecting EBSC, including a rulemaking, pertaining directly or indirectly to EBSC's determinations of direct billings and cost allocations to its affiliate utility companies.*

Management reports that there have been no covered decisions affecting EBSC since 2015. Therefore, nothing has triggered the application of this Commitment as yet.

f. No. 83: 60-Day General Service Agreement Change Letters

Commitment No. 83 of the Stipulation of Settlement provides that:

> *The Board and Rate Counsel will be sent copies of any and all "60-day" letters, and supporting documentation, sent by EBSC to the FERC concerning a proposed change in the GSA.*

The General Services Agreement (“GSA”) signed at merger closing in March 2016 remains unchanged; therefore, no 60-day letters have been sent.

g. No. 84: Filings Seeking GSA Changes

Commitment No. 84 of the Stipulation of Settlement provides that:

> *ACE shall file petitions for approval of any modifications to the GSA, including changes in methods or formulae used to allocate costs, with the Board of Public Utilities at the same time it makes a filing with the FERC.*

The GSA has undergone no change; therefore ACE has faced no requirement to act under this Commitment.

h. No. 85: BPU Review of GSA and Allocations

Commitment No.85 of the Stipulation of Settlement provides that:

> *Board Staff and Rate Counsel shall have the right to review the GSA and related cost allocations in ACE's future base rate cases, in conjunction with future competitive service audits, in response to any changes in the Board's affiliate relations standards, and for other good cause shown.*

This Commitment simply authorizes review of the GSA and cost allocations in future Board proceedings or audits, leaving no compliance issue for this audit to review.

2. Conclusions

1. Stipulation of Settlement Commitment Nos. 4, 6, 27, 77, 79, 83, 84, and 85 require no action, and will require none in the future, in the absence of the occurrence of specified actions or circumstances.

2. However, the practical application of Exelon's consent to BPU jurisdiction under Stipulation of Settlement Commitment No. 27 is unclear. *(See Recommendation #1 immediately below)*

It is not clear that Exelon's view of this consent would allow any significant practical application (beyond what jurisdiction the BPU has apart from the consent) in the event of a failure of Exelon to comply with a Commitment. According to Exelon, the BPU's jurisdiction is defined by statute, and cannot be expanded except by statute.

3. Recommendations

1. Engage stakeholders in a discussion of the practical application of Stipulation of Settlement Commitment No. 27, under which Exelon has consented to BPU jurisdiction, should uncertainty about its intent exist among them. *(See Conclusion #2 immediately above)*

Stakeholders should discuss the practical applications of Exelon's consent to BPU jurisdiction, in the event that they take the view that the Commitment was intended to do more than give the BPU jurisdiction it already has. While Exelon may not challenge the ability of the BPU to bring it forward, the real questions lie in what the BPU has the power to do in the event of allegations or concerns about the failure of Exelon or its affiliates not regulated by the BPU to honor merger commitments.

D. Superseded Merger Commitments

The Joint Settlement that formed the basis of the MFN order amended and superseded a number of the Commitments of the Stipulation of Settlement. We address them in following sections of this chapter, in sub-sections corresponding to the numbered provisions of the Joint Settlement. These next table shows these Stipulation of Settlement ("SoS") Commitments and the MFN Joint Settlement ("MFN JS") amending and superseding them.

Superseded and Amended Merger Commitments

Commitment		Subject
SoS	MFN JS	
No.7	No. 3A	Customer Investment Fund
No.8	No. 3D	Energy Efficiency Funding
No. 20	No. 6	CBAs, Attrition, and Hiring
No. 56	No. 11	PHISCo Functions and Assets
No. 61	No. 12	Dividends Subject to Equity Maintenance
No. 69	No. 4	Exelon Board Meetings in New Jersey
No. 70	No. 5	Exelon Executive Committee Meetings in New Jersey
No. 72.	No. 14	Ring Fencing in Place Within 180 Days

E. One-Time and Completed Merger Commitments

1. Findings

This group includes the following commitments fulfillable by one-time actions:

- Stipulation of Settlement
  - No. 3: General Services Agreement
  - No. 5: ACE Books and Records Location
  - No. 7: Rate Credits
  - No. 9: Future Base Rate Filing
  - No. 13: SAIFI/CAIDI Goal and Analysis
  - No. 15: Reliability Improvement Plan
  - No. 18: Deferred Payment Arrangements
  - No. 21: Post-Employment Benefits
  - No. 31: Special Purpose Entity (SPE) Creation
  - No. 33: SPE to Own 100% of PEPCO HOLDINGS
  - No. 60: Non-Consolidation Opinion
- Joint Settlement (MFN) Commitments
  - No. 3A Additional Rate Credits
  - No. 13: Ring Fencing Sufficiency Analysis
  - No.14: Ring Fencing within 180 Days and for 5 Years.

a. <u>No. 3: General Services Agreement</u>

Commitment No. 3 of the Stipulation of Settlement provides that:

> *Consistent with N.J.S.A. 48:3-7.1, the Signatory Parties agree it is in the public interest to authorize ACE to enter into Exelon's General Services Agreement, substantially in the form filed with the Joint Petition as Exhibit D, upon the closing of the Merger.*

The GSA as provided in the referenced Exhibit D bears a date of 2001, with execution by Baltimore Gas & Electric Company in 2012. There have been no changes for many years to the substantive terms and conditions of the GSA. The GSA's orientation focuses on Public Utility Holding Act requirements, providing an overall description of the service relationships involved. It lists the allocation ratios available for application when direct charging is not used. It requires the use of direct charging "so far as costs can be identified and related to the particular transactions involved without excessive effort or expense." It offers a non-exclusive list of the types of services by functional area and the "expected allocation ratios" for each. ACE, Delmarva, Pepco, PHI LLC, and PHISCo executed the agreement in essentially the same form effective March 24, 2016.

ACE's execution of the agreement which conforms to Exhibit D comports with the requirements of this Commitment. The agreement remains unchanged.

b. No. 5: ACE Books and Records Location

Commitment No. 5 of the Stipulation of Settlement states that:

> *The Signatory Parties agree ACE should be authorized to relocate its books and records from the current Board-approved location in Wilmington, Delaware to PHI's headquarters in Washington, D.C. consistent with the provisions contained in Paragraph 29.*

Exelon's legal department maintains custody of the ACE governance-related books and records at offices in the District of Columbia. Management maintains financial books and records electronically, and can provide access remotely at its operating locations in New Jersey.

c. No. 9: Future Base Rate Filing

Commitment No. 9 of the Stipulation of Settlement provides that:

> *Joint Petitioners further commit to filing a distribution base rate proceeding in the first three years following the closing of the Merger.*

ACE filed a petition on March 30, 2017 to increase base rates by approximately $70.2 million, satisfying this condition.

d. No. 13: SAIFI/CAIDI Goal and Analysis

Commitment No. 13 of the Stipulation of Settlement provides that:

> *The Joint Petitioners aspire to achieve first-quartile SAIFI and CAIDI performance. For the purposes of this settlement, the Parties define first-quartile performance across SAIFI and CAIDI using 2013 IEEE 2.5 beta definitions and exclusions across the Exelon peer panel of 26 utilities, which is a subset of the full IEEE annual survey panel. The 2013 reported numbers (SAIFI 0.85 interruptions, CAIDI 91 minutes) will be used for benchmarking. Within six months after the closing of the Merger, Joint Petitioners agree to provide a comprehensive Reliability Analysis explaining how ACE could achieve first-quartile performance. The Reliability Analysis will include detailed projects, activities, capital and O&M budgets estimates. This Paragraph is merely an expression of the Parties' desire for continued reliability improvements in the ACE service territory and does not indicate authorization to include any specific assets or amounts in rate base, does not indicate authorization for any ratemaking treatment, and does not constitute pre-approval for any amounts spent by ACE to achieve first-quartile performance levels.*

Management provided an "ACE Post Merger First Quartile Reliability Analysis" under cover of a September 23, 2016 letter. This analysis provided measurements of reliability performance, a description of programs to meet existing reliability targets, and a description of plans and programs through the year 2020. The more than 40-page report identifies both spending and reliability performance-level expectations. It provides an appropriate level of detail in explaining how ACE plans to move to top-end performance, what efforts it will take to get there, and what costs are expected to be required.

Chapters VI and XVII of this report addresses more fully the management and operation of the ACE electricity distribution system, assessing the sufficiency and propriety of both the programs described here and the overall context in which they will operate and the other programs with which they will co-exists. For the purposes of assessing merger commitment compliance, however, we found the analysis presented sufficient.

e. No. 15: Reliability Improvement Plan

Commitment No. 15 of the Stipulation of Settlement states that:

> *ACE commits to the continuation of the Reliability Improvement Plan ("RIP") (established in BPU Dkt. No. ER09080664, Order dated May 16, 2011) including its reporting requirements, 2016 performance targets, and budgeted reliability spending levels through 2015 (the previously determined reliability spending levels for 2014 and 2015 are specified in Table One below).*

We reviewed a number of ACE reports addressing reliability improvement plan, status, and accomplishments. For example, management presented a December 21, 2017 ACE *Electric Reliability Improvement Plan Progress Report for the Third Quarter, 2017*. The report summarized reliability results, but did not describe RIP activities or expenditures. Quarterly ACE reports on progress in improving reliability have presented:

- ACE's Overall SAIDI, SAIFI, and CAIDI since 2009 versus the RIP target
- Performance in each of the four ACE Districts (Cape May, Glassboro, Pleasantville, Winslow)
- Feeder results by class year
- CEMI (8) and (4) Results - - Customers Experiencing More than Eight/Four Interruptions in a 12-Month Period
- Tree Reliability Results
- Tree Outages and Impact
- Summary of Performance Measures.

The discussion under Commitment No. 16 below identifies other relevant reports, and we reviewed yet others during an interview. These reports provide information and analysis sufficient to meet the requirements of this Commitment. Chapters VI and XVII of this report describes the results of our examination of reliability activities, spending, and results in general. That chapter addresses the efficiency and effectiveness of this component of ACE management and operations.

f. No. 18: Deferred Payment Arrangements

Commitment No. 18 of the Stipulation of Settlement states that:

> *ACE will review its policies and processes for establishing deferred payment arrangements (DPAs), and will provide reasonable and accommodating policies to negotiate terms with customers on a case-by-case basis, permitting extended payment periods, and reducing initial down payment requirements. ACE will track the status of all its customers with a DPA and identify those customers whose status it currently reports as "Unknown." ACE will provide to Board Staff and Rate Counsel its plan to increase the portion of its deferred payment arrangements that are successfully repaid and to track the status of its "Unknown" DPA customers within three months following the closing of the Merger.*

This Commitment required the following accomplishments:

- Review of existing policies,
- Policies providing for case-by-case arrangements
- Policies permitting extended payment periods
- Policies reducing initial down payment requirements
- Tracking the status of all DPA customers
- Identifying customers reported as "unknown"
- Plan to increase the portion of DPAs successfully repaid
- Plan to track the status of “unknowns.”

Management provided under cover of a June 21, 2016 letter a *Report of ACE on Deferred Payment Arrangements* designed to respond to the directive in BPU Docket No. EM14060581. The report briefly reviewed policies, but focused particularly on changes. It provided for:

- Consideration of extenuating circumstances (i.e., case-by-case consideration)
- Multiple installment plans covering 6- and 12-month periods
- Initial down payment amounts determined through case-by-case negotiation
- Tracking of every customer with a deferred payment arrangement
- Listed a number of initiatives to increase successful repayments, noting a 27 percent increase in success over 2015.

Chapter XV provides an overall assessment of the effectiveness and efficiency of Customer Service management and operations, including late payments and arrangements to address them. For purposes of this chapter addressing compliance with merger commitments, we found the report and the changes and initiatives it described responsive to each element of this Commitment of the Stipulation of Settlement.

g. No. 21: Post-Employment Benefits

Commitment No. 21 of the Stipulation of Settlement states that:

> *Exelon agrees that it will assume PHI's obligations, or cause PHI to continue to meet its obligations, to ACE employees and retirees with respect to pension and retiree health benefits.*

The minutes of the June 15, 2015 meeting of the Old PHI board of directors reflect a resolution made in anticipation of and subject to the closing of the merger. The resolution acknowledged the need for amendments to the relevant plans to allow personnel currently eligible to begin or continue participation in the existing Old PHI-sponsored employee and director benefit plans. The resolution transferred sponsorship of all existing plans to Exelon, and authorized the Exelon board to amend or terminate the plans. The affected old PHI plans comprise the following:

- Defined Contribution Plan – 8 401k plans
- Defined Benefit Retirement Plan – 5 plans (separate one for ACE)
- Nonqualified Retirement Plans and Arrangements - - 4 plans (separate one for ACE)
- Deferred Compensation Plans – 3 plans
- Retirement and Severance Arrangements and Agreements (6 plans)
- Cash-Based Incentive Compensation Plans (1 executive-level plan)
- Benefit Plan Trust Agreements (16 plans).

The minutes of the April 28, 2015 meeting of the Exelon board of directors evidences the adoption of a resolution acknowledging the transfer of the Old PHI plans contingent on closing, listing those transferred, and reciting the desirability of permitting Old PHI personnel to continue under them post-acquisition. The resolution makes an Exelon entity the fiduciary, and transfers performance monitoring to Exelon's Corporate Investment Committee. The plans whose transfer the Exelon board's resolution acknowledges include those transferred by old PHI.

h. No. 31: Special Purpose Entity (SPE) Creation

Commitment No. 31 of the Stipulation of Settlement provides that:

> *Exelon will establish a limited liability company as a special purpose entity ("SPE") for the purpose of holding 100% of the equity interest in PHI.*

A Certificate of Formation for PH Holdco LLC, the SPE, evidencing the formation of the SPE, was filed with the Secretary of the State of Delaware in July 9, 2015. Management provided the Operating Agreement of PH Holdco LLC, dated as of July 9, 2015. The parties are the SPE and its two classes of members:

- Class "A" member Exelon Energy Delivery Company LLC (EEDC)
- Class "B" member GSS Holdings (PH Utility), Inc.

The Class "B" member serves as the holder of the Golden Share. Exelon has, as required by the Commitment, formed the SPE as a special purpose entity whose purpose is to own (and which does own) 100 percent of the equity interest in PHI LLC. The next section discusses rights that may serve to remove the entirety of Exelon's ownership of the SPE for practical purposes.

i. No. 33: SPE to Own 100% of PHI

Commitment No. 33 of the Stipulation of Settlement provides that:

> *EEDC will transfer 100% of the equity interest in PHI to the SPE as an absolute conveyance with the intention of removing PHI and its utility subsidiaries from the bankruptcy estate of Exelon and EEDC.*

An Assignment Agreement effective as of March 23, 2016 accomplished the required transfer of EEDC's 100 percent equity interest in PHI Holdings to the SPE (PH Holdco). The agreement described in this chapter's discussion of Commitment Nos. 31 and 32 reflect the required SPE ownership.

j. No. 60: Non-Consolidation Opinion

Commitment No.60 of the Stipulation of Settlement provides that:

> *Within 180 days following completion of the Merger, Exelon will obtain a legal opinion in customary form and substance and reasonably satisfactory to the Board of Public Utilities, to the effect that, as a result of the ring-fencing measures it has implemented for PHI and its subsidiaries, a bankruptcy court would not consolidate the assets and liabilities of the SPE with those of Exelon or EEOC, in the event of an Exelon or EEOC bankruptcy, or the assets and liabilities of PHI or its subsidiaries with those of either the SPE, Exelon or EEOC, in the event of a bankruptcy of the SPE, Exelon or EEOC. In the event that such opinion cannot be obtained, Exelon will promptly implement such measures as are required to obtain such opinion.*

An opinion of outside counsel from July 7, 2016 addressed the issue involved, concluding that consolidation would not occur under the conditions created by conformity to the merger order requirements.

k. No. 7 and MFN No. 3A: Rate Credit

Commitment No. 7 of the Stipulation of Settlement provides that:

> *After consummation of the Merger, Exelon Corporation ("Exelon") will establish a Customer Investment Fund ("CIF") of $62 million (equivalent to $114 per distribution customer, calculated based on the actual customer count at 12/31/13 of 543,989 distribution customers). The Parties recommend to the Board of Public Utilities (the "Board") that the CIF be distributed as a direct rate credit to Atlantic City Electric Company ("ACE") electric distribution customers within sixty (60) days of the closing of the Merger.*

The *Order Approving Joint Recommendation for Settlement of the Most Favored Nation Issue* (Docket EM14060581, entered October 31, 2016, and effective November 10, 2016) superseded the amounts set forth in this Commitment. MFN Commitment No. M3a provides the following with respect to Rate Credits:

> *The Joint Petitioners will provide additional rate credits consisting of two components: (1.) a $16,737,451 reduction of a portion of the present Non-Utility Generator Charge deferral balance and Uncollectible deferral balance that is part of the Societal Benefits Charge, both of which are the subject of a separate proceeding in BPU Docket No. ER16020099 (Exhibit D hereto contains additional details on how this rate credit will be applied); and (2.) an additional customer rate credit of $22,001,538 which will be provided to offset the rate increase for all customer classes approved by the Board in an Order (dated August 24, 2016) in the Company's base rate case in BPU Docket No. ER16030252 (as described more fully in Exhibit E hereto).*

The $16,737,451 operated as a one-time reduction in the deferral balance involved. ACE has reported monthly on the utilization of the $22,001,538 portion, which operates as a full offset to an approved rate increase until exhausted. We examined monthly letters available through 2017, during which the remaining balance in this second portion dropped steadily. For example, the credits and balances reported beginning with the first month's credits against the rate increase (June 2017) produced the following amounts:

- June 2017 credits of $1,367,238, leaving a balance of $20,634,299
- July 2017 credits of $4,445,690, leaving balance of $16,188,609
- August 2017 credits of $4,617, 270, leaving a balance of $11,571,339
- September 2017 credits of $3,945,954, leaving a balance of $7,625,385
- October 2017 credits of $2,850,168, leaving a balance of $4,775, 217.

Given the transparency of the deferral balance crediting and of the application of portions of the $22,001,538 portion, it appears that ACE has complied with this provision of the Joint Recommendation.

l. MFN No. 13: Ring Fencing Sufficiency Analysis

Provision No. 13 of the MFN Joint Recommendation provides that:

> *Exelon shall conduct an analysis of its operational and financial risk to determine the adequacy of existing ring-fencing measures. Exelon will include this analysis on a one-time basis in the report filed with the Board pursuant to Paragraph 15 herein, with copies provided to Rate Counsel at the time the report is filed with the Board. This paragraph revises and supersedes paragraph 64 of the Stipulation of Settlement.*

We described in this chapter's discussion under Commitment No. 64 (Annual Ring-Fencing and Other Requirements Reports) that counsel for ACE forwarded this analysis to the BPU on June 30, 2017. The analysis describes the Exelon risk program and approach, addresses its operational and financial risks, and opines that ring fencing is sufficient. The analysis addresses the matters required.

m. MFN No.14: Ring Fencing within 180 Days and for 5 Years

Commitment No.72 of the Stipulation of Settlement provides that:

> *The Joint Petitioners agree to implement the ring-fencing and corporate governance measures set out above within 180 days of merger closing for the purpose of providing protections to customers. Five years after the closing of the Merger, the Joint Petitioners shall have the right to review the provisions contained in Paragraphs 28 through 70, and to make a filing with the Board of Public Utilities requesting authority to modify or terminate those provisions. Notwithstanding such right, Joint Petitioners agree not to proceed with any such modification or termination without first obtaining Board approval in a written order. In addition, the Parties recognize that the Board at any time may initiate its own review or investigation regarding ring-fencing measures (or upon petition by any party) and order modifications that it deems to be appropriate, in the public interest and the best interest of ACE customers.*

Provision No. 14 of the MFN Joint Settlement supersedes Commitment No. 72. Provision No. 14 provides that:

> *The Joint Petitioners agree to implement the ring-fencing and corporate governance measures set out in the Stipulation of Settlement and this Joint Recommendation within 180 days after Merger closing, or as otherwise required by the Board, for the purpose of providing protections to customers. Not earlier than five (5) years after the closing of the Merger, the Joint Petitioners shall have the right to review these ring-fencing provisions and to make a filing with the Board requesting authority to modify or terminate those provisions. Notwithstanding such right, the Joint Petitioners agree not to proceed with any such modification or termination without first obtaining Board approval in a written order. In addition, the Joint Petitioners recognize that the Board at any time may initiate- its own review or investigation regarding ring-fencing measures (or upon petition by any party) and order modifications that it deems to be appropriate, in the public interest and the best interest of ACE customers. This paragraph revises and supersedes paragraph 72 of the Stipulation of Settlement.*

We did not examine the 180-day requirement, given its vintage, but we did observe that the covered measures adopted have remained in place.

2. Conclusions

3. Stipulation of Settlement Commitment Nos. 3, 5, 9, 13, 15, 18, 21, 31, 33, 60, and Joint Recommendation (MFN) Commitment Nos. 3A, 13, and 14 required one-time or time-limited actions, all of which have been completed.

However, we noted the following with respect to several of these Commitments:

- No. 3: General Services Agreement - - We anticipate future reviews of continuing GSA conformity with BPU policies and requirements in rate and other proceedings and in periodic audits
- No. 5: ACE Books and Records Location - - Records should remain accessible as part of general compliance with need for transparency and completeness in rate and other proceedings and audits
- No. 18: Deferred Payment Arrangements - - Compliance required only filing of policies, practices, and plans; Chapter XV of this report reviews efficiency and effectiveness of customer service management and operations
- No. 31: Special Purpose Entity (SPE) Creation - - Compliance occurred through creation, but see the discussion under Commitment No.32 for nature of SPE operation in light of ring fencing goals.

3. Recommendations

We have no recommendations regarding Stipulation of Settlement Commitment Nos. 3, 5, 9, 13, 18, 21, 31, 33, 60, and Joint Recommendation (MFN) Commitment Nos. 3A, 13, and 14.

F. Ongoing Structural Commitments

Commitment Nos. 29, 41, 42, 52, 66, and 67 from the Stipulation of Settlement directly address ongoing structural matters, as do MFN Nos. 4, 5, and 11.

1. Findings

a. No. 29: Separate ACE Existence

Commitment No. 29 of the Stipulation of Settlement provides that:

> *ACE will maintain its separate existence as a separate corporate subsidiary and its separate franchises, obligations and privileges.*

ACE continues as a separate entity, and maintains its franchises and obligations to provide utility service in New Jersey. The general role directly assumed by ACE, its officers, managers, and employees in providing utility service has remained the same following merger close. ACE continues to operate (through PHI LLC) under a sub-holding company, Exelon Energy Delivery Company LLC (EEDC) directly owned by parent Exelon. EEDC itself in turn ultimately owns all of the Exelon operating utility entities, including ACE. The descending chain of ownership from EEDC runs first to the SPE (PH Holdco LLC), then to PHI LLC, then to all of its utilities (including ACE) which PHI LLC owns directly.

The post-merger structure continues a role for an entity similar to that of Old PHI. The merger created a substitute for Old PHI. The entity bears the formal name of PHI Holdings LLC, and remains commonly referred to as PHI. We generally refer to it in this chapter as “PHI LLC” for clarity with respect to merger commitments. Other chapters generally refer to PHI LLC as “PHI.”

Ownership of ACE, Delmarva, and Pepco fall under PHI LLC following merger close. PHISCo remains under PHI LLC, providing these utilities with common services.

The merger brought two significant operational changes to PHI LLC. First, the non-utility operations under Old PHI moved to Exelon Generation Company LLC (“Exelon Generation”) - - a separate first-level subsidiary of parent Exelon. Second, a number of functions and personnel formerly located in PHISCo have moved to EBSCo, where the transferred personnel continue to serve the pre-merger PHI utilities, including ACE. Chapter IX discusses the overall Exelon organization structure and how it involves, affects, and serves ACE in more detail.

The ring-fencing Commitments of the Stipulation of Settlement have brought a number of organization changes different from those addressed above, which address management and operations. Those at issue here seek to secure required ring-fencing protections. A number of new legal entities created do not have an operational reason for being, but instead serve bankruptcy remoteness and other ring-fencing purposes legally and in terms of where authority to act on bankruptcy-related matters resides.

Other sub-sections of this chapter address the roles, structure, governance, and ring-fencing provided by this chain of ownership.

b. No. 41: No PHI Senior Officer Affiliate Positions

Commitment No. 41 of the Stipulation of Settlement provides that:

PHI's CEO and other senior officers who directly report to the CEO will hold no positions with Exelon or Exelon affiliates other than PHI and PHI's subsidiaries.

We interviewed all senior PHI LLC officers, and examined organization charts, board minutes, planning documents, and a variety of other documentation respecting the management and operation of PHI at its senior levels. The PHI LLC senior officers have no titled roles inconsistent with this Commitment, and we found no evidence of informal roles by PHI LLC senior officers with affiliates. We did find substantial coordination of plans, methods, and activities between senior PHI LLC officers and counterparts at Exelon and the other operating Exelon utilities. We found that coordination appropriate and beneficial in promoting consistent application of business practices and the identification of opportunities to transfer best practices among the Exelon utility operations.

c. No. 42: SPE Held Out as Separate Entity

Commitment No. 42 of the Stipulation of Settlement provides that:

At all times, the SPE will hold itself out as an entity separate from its affiliates, will conduct business in its own name through its duly authorized directors and officers and comply with all organizational formalities to maintain its separate existence and shall use commercially reasonable efforts to correct any known misunderstanding regarding its separate identity. PHI and its subsidiaries will hold themselves out as separate entities from Exelon and the SPE, conduct business in their own names (provided that PHI and each of PHI's utility subsidiaries may identify itself as an affiliate of Exelon on a basis consistent with other Exelon utility subsidiaries).

The SPE conducts strictly limited business activities, has little if any substantial exposure to the business and financial community, and conducts its activities in its own name and with, as described above, sufficient formality. Commitment No. 34 precludes the SPE from having employees. It has no documented policies or procedures requiring conduct of its business in these fashions, but the extremely small staff that Exelon uses to provide for its operations and narrow business scope does not appear to require them.

We have examined broadly and deeply the operations of PHI LLC and ACE. They hold themselves out as separate entities and they conduct business in their own names across the full spectrum of activities required to conduct electric distribution utility business. See the other chapters of this report for a description of the breadth and depth of the reviews supporting this observation.

d. No. 52: PHI Subsidiary Assets Held in Own Names

Commitment No. 52 of the Stipulation of Settlement provides that:

PHI and its subsidiaries will maintain in its own name all assets and other interests in property used or useful in their respective business and will not transfer its ownership interest in any such property to Exelon or an Exelon affiliate (other than a PHI subsidiary) without requisite approval of the Board of Public Utilities and any approval required under the Federal Power Act; provided that the foregoing shall not limit the ability of PHI to *transfer to Exelon or Exelon affiliates any business or operations of PHI or PHI subsidiaries that are not regulated by state or local utility regulatory authorities.*

ACE made only one, minor asset sale to an affiliate. It consisted of a transfer of meters to Pepco at a nominal price - - $2,740.

e. MFN No. 11: PHISCo to Remain Under and Serve PHI Exclusively

Commitment No. 56 of the MFN Joint Recommendation provides that:

PHISCo will remain as a subsidiary of PHI and will continue to perform functions and to maintain related assets currently involved in providing services exclusively to the PHI utilities. Other functions that are currently provided by PHISCo, including those that are provided to PHI utilities and to other current PHI subsidiaries, will be transferred to Exelon Business Services Company ("EBSC") or another Exelon affiliate in a phased transition over a period of time following the Merger closing.

Provision No. 11 of the MFN Joint Settlement supersedes this requirement. This provision provides that:

PHISCo will remain as a subsidiary of PHI and will continue to perform functions and to maintain related assets currently involved in providing services exclusively to the PHI utilities. Other functions that are currently provided by PHISCo, including those that are provided to PHI utilities and to other current PHI subsidiaries, will be transferred to EBSC or another Exelon affiliate in a phased transition over a period of time following the Merger closing. Prior to September 30, 2016, Exelon will file with the ·Board for informational purposes, with copies to Rate Counsel, its plan to integrate PHISCo within EBSC and other entities. Exelon will not finalize the implementation of such integration plan until thirty (30) days after it has been filed with the Board. This paragraph revises and supersedes paragraph 56 of the Stipulation of Settlement.

PHISCo remains under PHI LLC. PHISCo continues to perform on behalf of ACE and the other PHI utilities a range of functions directly related to the delivery of electricity. That range of services includes design, engineering, operations, maintenance, and customer service as primary examples. These nature and extent such PHISCo functions corresponds to those provided pre-merger.

A range of other corporate functions (*e.g.*, finance and treasury, legal, and human relations) have undergone consolidation at the Exelon level to varying degrees. Despite this transition, important elements of such functions still remain managed directly by PHI LLC's senior executive leadership or embedded within groups who serve only PHI LLC entities, but receive direction from EBSCo groups of which they form part.

The other chapters of this report detail the type, nature, and extent of utility technical and operations services remaining at PHISCo. They also address the corporate services that have undergone consolidation at the Exelon level through EBSCo. Those chapters demonstrate that PHISCo remains to serve the PHI LLC utilities, including ACE, with utility technical and operations services. In both cases (utility versus corporate services) the other chapters of this report examine the efficiency and effectiveness of PHISCo and EBSCo in performing their functions that support ACE. We provide that examination in a holistic manner, addressing efficiency and effectiveness overall - - considering all contributions from within ACE and from affiliates.

f. No. 66: EEDC as a Common Service Provider

Commitment No. 66 of the Stipulation of Settlement provides that:

> *Exelon shall not, without prior Board of Public Utilities approval, alter the corporate character of EEDC to become a functioning corporate entity providing common support services for PHI utilities.*

Management provided a September 1, 2016 *Second Amendment to Second Amended and Restated Limited Company Operating* Agreement of Exelon Energy Delivery Company, LLC, (EEDC). Parent Exelon executed the agreement as EEDC's sole owner of an economic interest (termed a Class "A" member). The document sets forth Exelon's agreements with respect to the affairs and business conduct of EEDC, which transferred 100 percent of the ownership of PHI as part of the merger's ring-fencing obligations.

The governing documents of EEDC empower it generally to do all lawful acts, which follows typical corporate charter practice. Thus, absent more, no documented governance document limitation would preclude EEDC from altering its "corporate character." The operating agreement provided by management does explicitly require the approval of each of the utility regulatory commissions in jurisdictions served by PHI LLC (including the BPU) before altering EEDC's "corporate character to become a functioning corporate entity providing common support services for Pepco Holding LLC subsidiaries."

Management has confirmed that no further amendments to the operating agreement have occurred.

g. No. 67: Exelon Corporate Reorganizations

Commitment No. 67 of the Stipulation of Settlement states:

> *Exelon shall not engage in an internal corporate reorganization relating to the SPE, PHI or ACE, or EEDC for which Board of Public Utilities approval is not required without 90 days prior written notification to the Board of Public Utilities. Such notification shall include: (a.) an opinion of reputable bankruptcy counsel that the reorganization does not materially impact the effectiveness of PHI's existing ring-fencing; or (b.) a letter from reputable bankruptcy counsel describing what changes to the ring-fencing would be required to ensure PHI is at least as effectively ring-fenced following the reorganization and a letter from Exelon committing to obtain a new non-consolidation option following the reorganization and to take any further steps necessary to obtain such an opinion. Exelon will not object if the Board of Public Utilities elects to open an investigation into the matter if the Board of Public Utilities deems it appropriate. Notwithstanding the above language in this Paragraph, the Joint Petitioners shall not materially alter the ring-fencing plan described in this stipulation agreement without first obtaining approval in a written order from the Board of Public Utilities.*

Our interviews and data requests, cited throughout this report chapter, have disclosed no reorganizations affecting the SPE, PHI LLC, ACE, or EEDC.

h. MFN No. 4: Exelon Board Meetings in New Jersey

Commitment No. 69 of the MFN Joint Recommendation provides that:

> *Exelon's Board of Directors will include the PHI utilities service territories among the locations of Exelon's board and shareholder meetings.*

The MFN Order (based on Joint Settlement Commitment No. 4) modified this obligation to include New Jersey among the locations of Exelon Board of Directors and annual stockholder meetings. Provision No. 4 provides that:

> *Exelon will include the State of New Jersey among the locations of Exelon's Board of Directors meetings and Exelon's annual stockholder meetings. This paragraph revises and supersedes paragraph 69 of the Stipulation of Settlement.*

Management provided a schedule for meetings through 2020. The Exelon Board meets quarterly, and conducts a strategy retreat each September. The board has scheduled Baltimore, Washington D.C., Chicago, and Philadelphia in the same time sequence for board meetings each year. The schedule shows Delaware as a location for the planning retreats.

The Exelon board of directors meets annually at a retreat to address strategic and planning issues. The 2017 Exelon Board retreat took place in Atlantic City. No further New Jersey meetings have been scheduled through 2020, but a number of meetings across that period have locations as yet undetermined.

i. MFN No. 5: Exelon Executive Committee Meetings in New Jersey

Commitment No. 70 of the MFN Joint Recommendation provides that:

> *Exelon's Executive Committee will include the PHI utilities service territories among the locations of Executive Committee meetings.*

The MFN Order (based on Provision No. 5 of the Joint Settlement) modified this obligation to include New Jersey among the locations of the Exelon Executive Committee. Provision 5 states that:

> *The Exelon Executive Committee will include the State of New Jersey among the locations of its meetings. This paragraph revises and supersedes paragraph 70 of the Stipulation of Settlement.*

The Exelon Executive Committee, which generally meets monthly, and on some occasions by teleconference, has held one meeting in New Jersey since May 2017. Exelon has complied with this Commitment. Management has scheduled one such 2018 meeting for New Jersey. The next table shows the other scheduled 2018 locations. Management’s comments on a draft of this report noted a New Jersey meeting in 2019.

2018 Executive Committee Meetings

Location	Number
Chicago	9
Baltimore	4
District of Columbia	2
Philadelphia	1
Delaware	1
Boston	1
To be determined	*1*

2. *Conclusions*

4. No. 29: Separate ACE Existence - - ACE has maintained the required existential separateness.

5. No. 41: No PHI Senior Officer Affiliate Positions - - No PHI LLC officer holds a prohibited Exelon or affiliate position.

6. No. 42: SPE Held Out as Separate Entity - - The SPE has carried out its very limited operations as a separate entity.

7. No. 52: PHI Subsidiary Assets Held in Own Names - - There has been only one, minor post-merger asset transfer. The subsidiary assets continue to be held in their own names to the extent existing pre-merger.

8. MFN No. 11: PHISCo Under Serving PHI Exclusively - - PHI LLC has maintained the required role for PHISCo.

There has been a phased transition of other, corporate services to EBSC, recognizing the need to consider particular benefits of retaining certain functions and activities at the PHI LLC level.

9. No. 66: EEDC as a Common Service Provider - - EEDC's character, from an operating perspective does not include providing common support activities.

Adding such a function would thus change its operating character. The operating agreement's limitation has the effect of precluding EEDC's provision of common services, absent the required regulatory approvals.

10. No. 67: Exelon Corporate Reorganizations - - There have been no reorganizations that implicate the requirements of this commitment.

11. MFN No. 4: Exelon Board Meetings in New Jersey - - Exelon has complied with the requirement to include New Jersey among the meeting locations.

12, MFN No. 5: Exelon Executive Committee Meetings in New Jersey - - Exelon has complied with the requirement to include New Jersey among the meeting locations.

3. Recommendations

We have no recommendations regarding Stipulation of Settlement Commitment Nos. 29, 41, 42, 52, 66, and 67 or Joint Recommendation (MFN) Commitment Nos. 4, 5, and 11, which address ongoing structural matters.

G. Ring-Fencing Generally

Substantial interplay exists among the Structural and the Special Purpose Entity and Golden Share commitment categories addressed later in this chapter. To a great degree, the *Pepco Holdings LLC Limited Liability Company Agreement* entered into as of March 23, 2016 reflects that interplay. We found it material to addressing whether that "LLC Agreement" may produce gaps in effectuating protections that the Commitments in those categories may intend.

1. Findings

a. Creation of PHI LLC

Ring-fencing protections comprise a central component of the many commitments required by the BPU as a condition of approving the combination of Exelon and Old PHI. The creation of a highly layered ownership structure, in turn, proves central to the execution of many of the Commitments that address ring-fencing. The LLC Agreement comprises a core document in creating that structure and in defining the roles of its components.

The LLC Agreement observes that the Old PHI (Pepco Holdings, Inc.) converted into a limited liability corporation, PHI LLC. This new PHI holding company thus continued to own the Old PHI utilities, including ACE. Exelon became the owner of PHI LLC through the merger. Exelon created Energy Delivery Company LLC (EEDC), of which Exelon owns 100 percent. Exelon then transferred 100 percent of its ownership of PHI LLC to EEDC, providing the first level of separation. The goal was to establish in EEDC an entity whose reason for existence and sole business lies in holding (directly at first, but ultimately indirectly) full ownership of PHI LLC, an interest ultimately owned by Exelon indirectly, but with the required type of insulation. EEDC became an indirect owner of PHI LLC by transferring it to the SPE, for the purpose of creating the ability to separate this new SPE from the bankruptcy estate of Exelon and EEDC - - a separation key to the required ring-fencing.

The LLC Agreement seeks to provide insulation from financial distress at other parts of Exelon, but not, understandably, to make the SPE or PHI LLC otherwise fully autonomous operationally. For example, the agreement requires Exelon's approval before: (a) adding additional entities as owners of PHI LLC, (b) entering mergers, consolidations, or conversions with other entities, (c) transferring substantially all assets, or (d) selling any of the utility subsidiaries.

b. Voluntary Actions of PHI LLC Related to Bankruptcy and Insolvency

The LLC Agreement requires that a majority of PHI LLC directors be "independent" as defined by New York Stock Exchange rules. Section 5.28 of the LLC Agreement requires unanimous consent of the directors for enumerated actions designed to provide ring-fencing. The actions requiring unanimous consent include:

- Commencing an action "relating to bankruptcy, insolvency, reorganization, or relief for debtors"
- Instituting proceedings to have PHI LLC adjudicated as bankrupt or insolvent
- Consenting or acquiescing to the institution of bankruptcy or insolvency proceedings against PHI LLC
- Filing or consenting to a petition seeking relief of PHI LLC debts under laws relating to bankruptcy
- Applying for, consenting to, or acquiescing in the appointment of a receiver, liquidator, or similar entity for the PHI LLC
- Making any assignment for the benefit of PHI LLC creditors
- Admitting in writing the PHI LLC's inability to pay its debts generally as they become due.

Limitations like these can generally be removed by a majority vote of directors, or potentially by an LLC's members (its owners). The members of this LLC (PHI LLC) include Exelon (owning 100 percent of the economic interest) and the SPE (holding a non-economic interest limited to certain ring-fencing and financial consents and approvals discussed later in this chapter). However, Section 5.2.8 limits the power to change the board of director requirement for the above listed six actions. That elimination itself requires unanimous consent of all directors. Again, as we discuss later, those directors include one with special independence requirements established by the merger commitments associated with the Exelon/Old PHI merger.

c. Involuntary Entanglement of PHI LLC in Affiliate Bankruptcy or Insolvency

Protections like these seek to limit Exelon itself from voluntarily seeking to involve PHI LLC or its interests in bankruptcy or insolvency proceedings arising from difficulties outside PHI LLC, but elsewhere within Exelon. Another key element of ring-fencing seeks to preclude Exelon (but not PHI LLC) creditors from securing an order involuntarily seeking to bring PHI LLC into bankruptcy or insolvency litigation of an affiliate or Exelon the holding company.

The LLC Agreement addresses this involuntary entanglement as well. Section X of the LLC Agreement requires PHI LLC to maintain "separateness" in an enumerated list of ways. This list addresses the factors considered relevant when deciding whether to bring a distinct entity (like PHI LLC) into the bankruptcy of a body with which it is affiliated. Maintaining PHI LLC's separateness acts as a safeguard against a judicial decision to include it into bankruptcy or other insolvency proceedings entangling Exelon or its non-utility operations. The separateness aspects that Section X addresses require PHI LLC to:

- Hold itself out as a legal entity separate from Exelon and its affiliates
- Maintain separate books, records, accounts, and financial statements reflecting its separate assets and liabilities
- Acquire, maintain, and convey its assets and other property interests in its own name, and secure required approvals of transfer to Exelon or affiliates
- Not commingle its funds or other assets, and not maintain them in a way making it costly or difficult to identify them separately

- Conduct business in its own name and personnel, and comply with organizational formalities to maintain its separate existence
- Maintain a separate name, and refrain from use of trademarks, service marks or similar intellectual property of Exelon or affiliates
- Exercise commercially reasonable efforts to correct known misunderstanding of its separate identity
- Conduct dealings on an arm's length, fair and reasonable basis
- Refrain from the assumption of liability for or guarantees of Exelon and affiliate debts or credit instruments
- Use reasonable efforts to preserve investment grade credit ratings
- Account for and manage its liabilities separately, and pay its obligations and liabilities from its own funds
- Refrain from holding out its credit as available to satisfy the obligations or liabilities of others
- Maintain capital adequate for its business purpose, transactions and liabilities.

LLC Agreement Section 5.2.8 also requires unanimous PHI LLC director agreement to modifying or eliminating any of these 13 separateness requirements (as it did for the above-listed actions related to voluntary PHI LLC entanglements in the bankruptcy or insolvency of affiliates).

d. Limiting the Power to Weaken Bankruptcy Protections

Restrictions like these involving the six consensual PHI LLC actions that can produce consensual entanglements in affiliate bankruptcies or the preservation of the 13 separateness aspects that mitigate against involuntary entanglements form important elements of the ring-fencing protections that the merger commitments produce. Therefore, as we explain below in connection with Commitment No. 39 (Consents to SPE Bankruptcy) permitting them to be weakened, even with the advance, unanimous consent of PHI LLC board members is problematic.

The LLC Agreement also permits its members to change provisions like those affecting the 7 consensual actions and the 13 separateness preservation requirements. [redacted]:

- [redacted]
- The Golden Share, whose agreement is required for designated actions or votes affecting ring-fencing protections).

Section 11.6. of the LLC Agreement provides that it, "…may be amended or modified by a written instrument executed by all of the Members." The first question raised by this provision is whether amendment and modification by the members requires ratification by a unanimous PHI LLC board. Even if it does, the same concern about elimination of the 13 and the 6 protections, even without objection remains problematic.

e. The SPE Governing Agreement

The *Operating Agreement of PH Holdco LLC* (SPE Operating Agreement), dated as of July 9, 2015 addresses SPE structure and operation. The parties are SPE and its two classes of members

- Class "A" member Exelon Energy Delivery Company LLC (EEDC)
- Class "B" member GSS Holdings (PH Utility), Inc.

The Class "B" member serves as the holder of the Golden Share, discussed below in connection with Commitment 37. The SPE Operating Agreement permits a transfer of EEDC's ownership in whole or in part. EEDC may also pledge its interests, upon which the pledgee may, following foreclosure, become a Class "A" member.

The agreement requires that the SPE created for purposes of applying ring-fencing Commitments of the Stipulation of Settlement, carry out business in that name, subject to requirements of the jurisdictions in which the PHI LLC utilities operate. The SPE Operating Agreement limits the operating purpose of the special purpose entity to holding Exelon's ultimate ownership and to activities "necessary, convenient, or advisable" in support of that ownership-holding duty.

Exelon has, as required, formed the SPE as a special purpose entity whose purpose is to own (and does own) 100 percent of the equity interest in PHI LLC.

Section 3.2 of the SPE Operating Agreement contains a provision stating that:

> *To the fullest extent permitted by law, including, without limitation, Section 18-110 l (c) of the Act, the Independent Director shall consider the interests of the Company, and its creditors, in acting or otherwise voting on any matter provided for in this Agreement.*

Section 18-1101(c) of the Delaware Limited Liability Company Act reads:

> *To the extent that, at law or in equity, a member or manager or other person has duties (including fiduciary duties) to a limited liability company or to another member or manager or to another person that is a party to or is otherwise bound by a limited liability company agreement, the member's or manager's or other person's duties may be expanded or restricted or eliminated by provisions in the limited liability company agreement; provided, that the limited liability company agreement may not eliminate the implied contractual covenant of good faith and fair dealing.*

The SPE Operating Agreement lists 17 ring-fencing related obligations, generally consistent with those set forth in the LLC Agreement (discussed above), but adding several more:

- Precluding pledges of assets for the benefit of, loans to, or holding indebtedness of any other entity
- Complying with generally accepted accounting procedures and the issuance of separate financial statements and reports
- Observing necessary appropriate, and customary formalities in dealing with EEDC and affiliate
- Making business and operations decisions independently
- Precluding transfer of funds to EEDC or affiliates without Board consent

The SPE Operating Agreement also requires the SPE to cause its directors, officers, and other representatives to act consistently with and in furtherance of the 17 substantive ring-fencing obligations enumerated.

The LLC Agreement, discussed in the preceding subsections, lists a series of prohibitions related to entangling PHI LLC in bankruptcy or similar proceedings or actions. The SPE Operating Agreement prohibits the same, except on unanimous consent of all board members. It also prohibits the modification of the list of 17 substantive ring-fencing obligations and the removal of the requirement of unanimous consent for the voluntary bankruptcy or insolvency related actions. The vote of the Golden Share Holder, however, is not required in connection with the list of seven. Another section of the SPE Operating Agreement requires the same unanimous vote of all board members and the Golden Share Holder to vote the shares of PHI LLC to undertake any of the same seven bankruptcy or similar proceedings or actions, or to amend the governing documents of PHI LLC to remove the requirement for unanimity regarding the list of seven.

Section 7.1 of the SPE Operating Agreement permits dissolution of the SPE on unanimous vote of the board and approval of the Golden Share Holder. Section 9.3 requires the Golden Share Holder to approve SPE Operating Agreement amendments implicating the sections addressing the lists of 17 and 7, but nothing else implicated by the Stipulation of Settlement, even though the agreement involves many Stipulation Commitments.

The SPE agreement directly addresses many of the obligations imposed by the merger Commitments. Section 9.3 provides for amending it. EEDC as the Class "A" Member may generally amend the agreement on its own, with one principal exception. The Golden Share Holder must approve amendments that affect the bankruptcy-related actions of Section 5.1 (b) and (c).

2. Conclusions

13. The 13 separateness requirements of Section X of the LLC Agreement and the Section 5.2.8 limits on voluntary actions should be preserved against dilution, even with unanimous board and Golden Share Holder consent. *(See Recommendation #2 below)*

The changes may, and are in fact, likely to occur in times of financial health for Exelon. It is difficult to see the logic in determining that the protections were worth making a condition of merger approval, while thereafter exposing the continuation of those protections into the future to a single decision at any time by present or future PHI LLC independent boards member or Golden Share Holders.

14. The ability to amend provisions of the SPE Operating Agreement without independent director or Golden Share Holder approval creates the ability to remove protections central to the Commitments related to ring-fencing. *(See Recommendation #3 below)*

We have concern with the ability to amend the bankruptcy-related provisions, even with Golden Share Holder approval. We also have concern about the ability of EEDC, acting alone, to make a number of other important SPE agreement changes affecting the Commitments. They should not be subject to change at all without regulatory approval, let alone not even requiring approval by either the SPE independent director or the Golden Share Holder.

3. *Recommendations*

2. **Make explicit in the LLC Agreement the inability to alter (even with unanimous director and Golden Share Holder consent) Section X, Section 5.2.8, and any other provisions giving effect to the ring-fencing provisions of the merger commitments.** *(See Conclusion #13 above)*

3. **Change the SPE Operating Agreement to require independent director and Golden Share Holder approval of changes material to the Commitments' ring-fencing protections.** *(See Conclusion #14 above)*

Many of the provisions of the Operating Agreement of PH Holdco can and should remain the sole province of the non-independent directors. However, those directors have the power (to the exclusion of roles for the Independent Director and the Golden Share Holder) to remove by amendment many Commitment-related restrictions (many of them directly related to ring-fencing) that were of sufficient significance to place in the agreement in the first place. Such provisions should not be subject to amendment without Independent Director and Golden Share Holder approval.

Examples of these sections include (but are not necessarily limited to:

- Section 1.8 setting forth the business purpose of the company and prescribing its ownership, which Commitment Nos. 31 and 32 address specifically
- Section 1.10 defining terms important to the independent operation of the SPE, such as "Affiliate" and "Independent Director" and "Subsidiary."
- Section 2.6 allowing the admission of new members
- Section 2.7 defining the Golden Share Holder's duties (fiduciary and otherwise) to EEDC and presumably Exelon more generally
- Section 2.8 addressing assignment, sale, pledging and other aspects of EEDC's ownership and use of ownership rights
- Section 2.9 addressing termination of the Golden Share Holder's role
- Section 3.2 requiring an independent director to be sitting, describing the Exelon entities whose interests the independent director has a duty to consider, limiting the ability of this director to serve as a bankruptcy trustee of an EEDC affiliate and what comprises an independent director, .4, 2.7, 2.8, and 3
- Section 5.1(a), which contains a long list of activity limitations directly addressed by these Commitments.

Examples of the latter include:

- Funds commingling with other entities
- Holding the SPE out as a separate entity and conducting business in its own name
- Not using affiliate trademarks
- Maintaining separate books, records, and financial statements, and complying with GAAP
- Maintaining arm's length relationships with affiliates
- Maintaining adequate capital
- Managing and satisfying liabilities separately and from its own funds
- Not guaranteeing or becoming obligated for debts of others

- Making independent operating decisions.

H. Ongoing Special Purpose Entity and Golden Share Commitments

Commitment Nos. 32, 34, 35, 36, 37, 38, 39, 40, 43, 44, 45, 46, 51, 54, 58, and 59 directly address ongoing Special Purpose Entity (SPE) and Golden Share matters.

1. Findings

a. No. 32: Ownership of SPE

Commitment No. 32 of the Stipulation of Settlement provides that:

The SPE will be a direct subsidiary of Exelon Energy Delivery Company LLC ("EEDC").

We described in this chapter's discussion of Commitment No. 31 (Special Purpose Entity Creation), EEDC's direct ownership of the SPE, and the existence of the Golden Share Holder (the Class "B" member). The SPE operating agreement permits a transfer of EEDC's ownership in whole or in part. For example, Section 2.8 of the SPE Operating Agreement permits EEDC to "sell, assign, pledge, hypothecate or otherwise transfer, in whole or in part" the membership units that reflect EEDC's ownership of the SPE. Furthermore, the section permits a party to whom EEDC has pledged those units (for example, a creditor of Exelon) to become a "Member" of the company. Alienation of EEDC's interests or a pledge of EEDC's ownership interests requires approval by only a majority of the SPE board. Thus, the Golden Share Holder's support is not required for alienation that may technically continue the existence of EEDC, but with an ownership mix transformed - - perhaps fundamentally.

Counsel for Exelon observed that, despite the absence of explicit language limiting the powers granted under Section 2.8, EEDC could take no action that would result in its failure to continue to own the SPE directly. He reasoned that EEDC has an obligation to act in accord with the law, and observed that these Commitments have the force of law. Therefore, he concluded that EEDC could not take an action that would produce a result contrary to this or any other Commitment. This position does not directly confront an important issue - - whether or not alienation or pledging of EEDC's ownership threatens the obligation that the SPE "will be" a direct EEDC subsidiary, and if it does, why the agreement should specifically empower EEDC to do something that violates that obligation.

We did not find that position argument sufficiently comforting. First, it begs the question of why many of the documents created to reflect the requirements of these Commitments have been carefully constructed, and designed in major part to mirror Commitment language. Doing so provides clarity and certainty should Exelon ever find itself in situations of extreme financial difficulty - - certainly not a likelihood, but nevertheless a possibility considered central in merger commitment design. We consider such occasions extremely unlikely to occur, as we would postulate the BPU and stakeholders did at the time of the merger and continue to do. Nevertheless, the necessity for ring-fencing protections has become no less today. Applicable governing agreements should not create a path for undercutting this or other ring-fencing protections on the premise that the Commitments alone will suffice to constrain: (a) an Exelon in severe financial distress and facing potentially massive losses, or (b) bankruptcy officials amassing a pool of resources sufficient to reorganize debtor affairs, not charged with effective utility regulation.

b. No. 34: Limit on SPE Functions and Employees

Commitment No. 34 of the Stipulation of Settlement provides that:

The SPE will have no employees and no operational functions other than those related to holding the equity interests in PHI.

The SPE elected an Assistant Treasurer on January 17, 2017. The incumbent resigned from that position (held in common with Exelon ad other subsidiaries) on April 1, 2017. Another individual resigned from an unnamed officer position on April 21, 2017. The directors elected individuals as Vice President and Treasurer and as Assistant Secretary at around the same time. Between the end of 2017 and the Spring of 2018, four officer replacements took place: Assistant Vice President, Taxes, Vice President, Taxes, Secretary, and Assistant Secretary.

The SPE has and has had no employees. It has and has had a number of officers, created for purposes of effecting the limited pass-throughs noted above. The SPE prepares no budgets. It has not had income or expenditures (apart from upward and corresponding downward pass-throughs of capital contributions and distributions on a dollar for dollar basis). It prepares no strategic, financial, or operating plans.

c. No. 35: SPE Capitalization

Commitment No. 35 of the Stipulation of Settlement provides that:

The SPE shall maintain adequate capital in light of its contemplated business purpose, transactions and liabilities; provided, however, the foregoing shall not require the owners to make any additional capital contributions.

Management provided on-site access to the minutes of the SPE. The minutes document resolutions of the SPE board of directors since its formation. The minutes show no net contributions to or distributions of permanent SPE capital, with one exception. All transactions with this one exception (on June 30, 2016 in the amount of $16,609,000) came in pairs having matching, cancelling amounts. The $16,609,000 exception, highlighted in the list below, came shortly after creation of the SPE and involved an amount not large in the context of the total capital of entities with the size and scope of PHI LLC.

The board resolutions, all approved by the three non-independent directors, largely acknowledge or authorize capital transfers to and from the SPE. The only others concerned appointments and resignations of officers, with those changes focusing on treasury-type personnel.

With transactions involving two legs made essentially contemporaneously, we observed that the SPE has essentially operated as a conduit through which one of two net transfers occurs:

- Moving capital needed by the PHI LLC utilities down from higher levels of Exelon
- Distributing equity as dividends generally do, not needed for PHI LLC utility needs up to Exelon.

All these pass-through transactions began as transfers into the SPE and ended with a transfer out in corresponding amounts, either up or down, depending on which of the two purposes the transactions served. These transfers consisted of:

- June 30, 2016
  - Contribution from EEDC to capital account (April through May 2016) in the total amount of $976,165,017
  - Corresponding $976,165,017 in capital contributions to PHI LLC
  - ***Distribution of $16,609,000 to EEDC*** (only transaction without a corresponding one in an equal amount)
  - September 8, 2016: $112,960,000 from EEDC, transferred to PHI LLC
  - December 8, 2016: $99.1 million from PHI LLC, transferred to EEDC
  - March 9, 2017: $69 million from PHI LLC, transferred to EEDC
  - March 23, 2017: $500 million from EEDC, transferred to PHI LLC
  - June 6, 2017: $63 million from PHI LLC, transferred to EEDC
  - June 8, 2017: $161 million from EEDC, transferred to PHI LLC
  - June 9, 2017: $90 million from EEDC, transferred to PHI LLC
  - September 7, 2017: $135.3 million from PHI LLC, transferred to EEDC
  - December 7, 2017: $44.5 million from PHI LLC, transferred to EEDC
  - March 6, 2018: $70.5 million from PHI LLC, transferred to EEDC.

Management confirmed that no SPE debt and no capital exist apart from that temporarily existing as part of the pass through of capital contributions made from EEDC for "re-contribution" to the PHI LLC operating utilities and of equity distributions received from those utilities and passed up to EEDC in the nature of dividends.

The pass-through transactions described here evidence limiting the use of the SPE to effectuate the bankruptcy remoteness of PHI LLC. Chapter XIII of this report addresses the capital needs and the equity distributions of PHI LLC and ACE from a management and operations perspective, and provides our findings and conclusions about how effectively and economically management has acted to meet them.

d. <u>No. 36: SPE Directors</u>

Commitment No. 36 of the Stipulation of Settlement provides that:

> *The SPE will have four directors appointed by EEDC. One of the four SPE directors will be an independent director, who will be an employee of an administration company in the business of protecting SPEs, and must meet the other independence criteria set forth in the SPE governing documents. One other director will be appointed from among the officers or employees of PHI or a PHI subsidiary. The other two SPE directors may be officers or employees of Exelon or its affiliates, including PHI and its subsidiaries.*

The SPE operating agreement calls for an initial board membership of three "Operating Directors," who may (and initially did) have connections rendering them non-independent from Exelon and its subsidiaries. EEDC has the right to remove, replace, or increase the number of these non-independent directors. The agreement also requires that the board also maintain at all times at least one "Independent Director." EEDC elects the Independent Director.

Three Exelon executives served as the first set of non-independent directors of the SPE:

- Exelon President and CEO
- Exelon Senior Vice President and Exelon Utilities CEO
- Exelon Senior Vice President, Deputy General Counsel, and Assistant Corporate Secretary.

The board replaced the last of these directors effective January 11, 2018, naming his successor to his executive position with Exelon. This person served as the Assistant Secretary of PHI LLC.

The same individual has served as the independent director since SPE creation. Her profile lists her position as "Manager, Independent Director Services at Corporation Service Company." This company (CSC) advertises itself as "the world's leading provider of business, legal, tax, and digital brand services to companies around the globe." The firm's web site cites service to 90 percent of Fortune 500 companies, nearly 10,000 law firms, and over 3,000 financial organizations, noting its work in "helping businesses form entities, maintain compliance, execute transaction work, and support real estate, M&A, and other corporate transactions in hundreds of U.S. and international jurisdictions." The web-site lists the providing of independent directors, through DCS subsidiary Delaware Trust, as a line of business.

The applicable definition of independent directors precludes:

- Equity holders of PHI LLC or any of its affiliates, which affiliates include Exelon and its subsidiaries
- Significant customers, advisors, and suppliers, of PHI LLC or any of those affiliates
- Former or current EEDC and subsidiary officers, managers, employees, or non-independent directors (but apparently not those of Exelon entities above EEDC in the ownership chain up through Exelon)
- Trustees, receivers, or conservators of EEDC or any affiliates
- Persons with prior experience as independent directors in entities similarly designed and constructed to the SPE.

Section 1.10(a)(4) of the Operating Agreement of the SPE defines "Independent Director." Clause (ii) of that section bars current and former EEDC officers from serving as directors, but the definition does not bar former officers of the parent or other Exelon affiliates above or outside the EEDC line of ownership.

e. <u>No. 37: Golden Share</u>

Commitment No. 37 of the Stipulation of Settlement provides that:

> *The SPE will issue a non-economic interest in the SPE (a "Golden Share") to an administration company in the business of protecting SPEs and separate from the administration company retained to provide the person to serve as the independent director for the SPE. The holder of the SPE's Golden Share will have a voting right on matters specified in the SPE governing documents, as described below.*

The July 9, 2005 *Operating Agreement of PH Holdco LLC*, dated as of July 9, 2015 (discussed above in connection with Commitment No. 31, describes the conditions for the governance and operation of the SPE. The ring-fencing elements of the Commitments involve the SPE in two principal ways:

- Certain actions require unanimous approval of the SPE board of directors, which must include one independent director
- Certain actions also require the approval of the Class "B" member (the Golden Share Holder).

Creation of the Class "B" member's Golden Share interest in the SPE serves the purpose of restricting certain actions associated with the ring-fencing Commitments of the Stipulation of Settlement.

Global Securitization Services LLC (GSS), founded in 1996, operates a recognized leader in the ownership and administration of special purpose entities. Entities owned and operated by GSS have performed similar roles in other utility ring-fencing structures, providing experienced individuals to serve as independent directors of special purpose entities to meet bankruptcy-remoteness requirements. Exelon does not claim knowledge of the relationship between GSS and the entity created to perform the Golden Share role here. That entity is GSS Holdings (PH Utility), Inc. (the Golden Share Holder). Exelon has reported, based on information from GSS that:

- GSS holds no direct or indirect ownership in the Golden Share Holder
- GSS operates as a limited liability company with nine members who serve as members of the GSS senior management team
- Three of those members wholly own GSS Holdings, Inc., which directly owns the Golden Share Holder

GSS, again according to what Exelon has learned, is "…not aware of any business interests or other relationships between Global and its affiliates and creditors of Exelon or its affiliates." No representation has been made with respect to the interests of the nine members of GSS or the three who own the entity that owns the Golden Share Holder. GSS Holdings also wholly owns the entity created to serve as in a similar Golden Share entity at the direct parent of BG&E.

GSS Holdings (PH Utility) acquired the Golden Share in an irrevocable transfer under a purchase agreement with the SPE through a purchase agreement dated as of July 14, 2015.

The agreements and arrangements under which GSS and its subsidiary provide services related to holding the Golden Share include four particularly noteworthy aspects:

- GSS, the parent of the Golden Share Holder, is not required to own 100 percent of its subsidiary serving as the Golden Share Holder
- GSS may have material business interests that may include creditors of Exelon and its affiliates
- GSS may have material business interests that may include Exelon and its affiliates.
- No documentation exists to provide standards, requirements, objectives, or other forms of guidance regarding the duties of the Golden Share Holder, or to whom and of what nature the Holder has duties.

The Golden Share Holder performs that role under a July 14, 2015 "Engagement Agreement." The SPE must provide for the Golden Share membership to remain outstanding until resignation of the Golden Share Holder. The agreement calls for the Golden Share owner to transfer its membership units as EEDC directs, upon termination of the Engagement Agreement. The agreement, however, conditions the effectiveness of such a termination on the institution of a replacement, thus preserving the existence of a Golden Share Holder pending EEDC's naming of a replacement. The Golden Share Holder can also transfer its interest to a company "engaged in the business of administering special purpose entities" with approval of EEDC.

Section 2 of the Services and Indemnity Agreement among the Golden Share Holder, its parent, EEDC, and PH Holdco LLC provides for indemnification of the Golden Share Holder, except for losses resulting from gross negligence or willful misconduct by the Golden Share Holder or its parent. Exelon could not provide helpful guidance on what would constitute gross negligence or willful misconduct1032, Attachment 2.

The agreement specifically permits directors and the Golden Share Holder to engage in businesses that act in competition with that of EEDC. This begs the question of the ability of creditors of Exelon and affiliates to fill those roles. The agreement does not require GSS to own 100 percent of the Golden Share Holder it created as a subsidiary.

The SPE operating agreement exempts the Golden Share Holder from any fiduciary or similar duty to the SPE, its owners, or those who represent it, to "the maximum extent permitted by law." The agreement recites the acknowledgement of the SPE and its Class "A" member or owner (EEDC) that the Golden Share Holder owes no duties other than as specified in the agreement.

A "Services and Indemnity Agreement" dated as of July 14, 2015 governs the providing of the Golden Share services. The parties to this agreement from the Exelon side consisted of EEDC and the SPE. The Golden Share-side parties comprise"

- GSS Holdings (PH Utility), Inc. (the entity established to hold the Class "B" Membership, or Golden Share interest in the SPE)
- Global Securitization Services, LLC, the owner of 100 percent of GSS Holdings (PH Utility).

This agreement obligates GSS Holdings (PH Utility) to hold the Golden Share subject to the "Formation Document" of the SPE, in return for annual compensation of $5,000 per year, plus compensation for any costs for attorneys and other persons retained by GSS Holdings (PH Utility).

The agreement obligates EEDC to indemnify the two Golden Share-side parties for any of their losses, acts, or omissions in providing its services. There exist no clear limits on the subject matter of the acts for which and to whom indemnification does not extend. Indemnification appears commensurate with the limited annual compensation paid to the Golden Share Holder, but underscores the issue of how and in consideration of whose interests the Golden Share Holder may be expected to act in the event of Exelon financial difficulties that threaten PHI LLC.

The Golden Share entity's owner Global Securitization Services, LLC, has a substantial business interest in ensuring its market that it takes its Golden Share responsibilities very seriously.

However, its economic interest in the Exelon/PHI arrangement has small magnitude - - which could be significantly overwhelmed should it acquire substantial interests akin to those of Exelon creditors who may have very large financial stakes in the question of whether PHI LLC and its entities can become entangled in an Exelon bankruptcy.

As is true here, Central Hudson Gas & Electric Company chose a GSS subsidiary to hold a Golden Share for similar ring-fencing purposes. A party to that case objected to the selection of this entity, in part on the basis of the following:

> *The compliance filing does not assert that the "golden share" holder has any contractual duty to vote the "golden share" so as to "prevent the placement of Central Hudson in voluntary bankruptcy," as the Commission says is intended. There is no reference to any contractual provisions relating to how the holder of the "golden share" is to determine and "protect the interests of the State of New York, including legal and other interests arising under the Public Service Law .... " Apparently we must conclude based on what has been filed that there are no written standards for the "golden share" holder to apply in determining how to vote the share when a bankruptcy is proposed by the new Fortis-controlled Central Hudson Board.*

After denying this objection on procedural grounds, the New York Public Service Commission also rejected it substantively, stating that:

> *The June order requires creation of a "golden share," as a class of subordinated preferred stock to be issued to a holder which is assigned a fiduciary obligation to "protect the interests of New York and be independent of the parent company and its subsidiaries." [at page 19]*
>
> *In adopting the golden share provisions, we anticipated that the June order and the rest of the record on this subject would provide all the guidance necessary for exercising the golden share. As a fiduciary, GSS-CHGE has an obligation to act in the best interests of New York, including voting against a voluntary Central Hudson bankruptcy when such a bankruptcy would not serve the State's interests. [at page 21]*

In contrast to the settlement agreement in New York and the New York Public Service Commission's interpretation of it, no language in the commitments here sets forth any fiduciary or other duty, or compels consideration or protection of the interests of New Jersey - - only that the Golden Share Holder be independent in respects that would not prevent it from becoming conflicted when its assent becomes critical to the Commitments' ring-fencing provisions.

The Services and Indemnity Agreement here includes a representation and warranty the GSS Holdings (PH Utility) has no business, assets, or liabilities other than through services as Golden Share Holder. The agreement obligates GSS Holdings (PH Utility) not to engage in any other activities in the future. Both Golden Share-side parties agree not to transfer or pledge the Golden Share absent EEDC consent and in conformity with the Formation Document. The agreement can be terminated by either party on thirty-days written notice, but no termination may be effective until a replacement Golden Share Holder has been appointed and has received the consent of EEDC. The agreement provides no guidance on how the Golden Share Holder is to exercise its powers as that holder.

The *Operating Agreement of PH Holdco LLC* (first described in the preceding discussion of Stipulation of Settlement Commitment No. 31 - - Special Purpose Entity Creation) has established a proper structure for and has given the required voting rights to a Golden Share interest - - GSS Holdings (PH Utility), the Class "B" Member. The use of a GSS subsidiary also connects (for the present) the Golden Share interest to an administration company in the business of protecting SPEs. However, a number of factors create uncertainty about how one might expect the Golden Share Holder to act when the protections it exists to provide prove most crucial. These factors include:

- The percentage of GSS ownership of its subsidiary
- The lack of limits on competing business interests on the part of GSS - - business interests that presumably may include creditors of Exelon
- The lack of limits on business that GSS may do with Exelon
- The provision of indemnity to the GSS and its subsidiary the Golden Share Holder for errors and omissions in carrying out the Golden Share Holder roles
- Uncertainty about the obligation of the Golden Share Holder to continue to perform services upon a breach of the agreement governing those services.

The agreements with the Golden Share Holder and its parent do not preclude other, substantial business arrangements or common interests between them and any Exelon entity. Nor are there assurances that the standard debated in New York applies with respect to the Golden Share Holder's actions become critical to keep PHI LLC and its entities suitably free from entanglement in financial distress from elsewhere in the Exelon family.

We asked directly for an explanation and documents that would provide confidence that Golden Share owner will: (a) exercise its duties strictly from the perspective of PHI LLC utility operations, and (b) act according to a view of PHI LLC utility interests uninfluenced by adverse impacts on Exelon and its other affiliates. We received no substantially supportive documents. Management provided an explanation focusing on independence, but did not address the lack of influence of potentially adverse impacts on Exelon. A telling part of the response made clear that those interests may be considered and perhaps persuasive:

> *The Golden Member is expected to consider the facts and circumstances and to make an independent decision regarding the matter under consideration. In doing so, the Golden Member* ***may act*** *to protect the interests of creditors of SPE and its subsidiaries rather than interests of the SPE's parent company or creditors of the parent company.* [emphasis added]

The answer appears to confirm that nothing compels the SPE to protect the interests of PHI LLC as an ongoing utility operation subject to robust independence (*i.e.*, free from competing bankruptcy interests and protections). The answer expressly acknowledges only creditor interests - - even there including Exelon creditors among those whose interests may secure protection.

We interviewed representatives from the Golden Share Holder directly and its ownership. They generally described an approach consistent with a perspective that would strongly focus on PHI LLC and its subsidiaries. However, they acknowledged that there is no way to predict outcomes to hypothetical situations. We found the perspectives they offered as likely to be among those considered in circumstances of extreme Exelon financial distress generally responsible. The concern lies in reliance on them to apply "when the time comes," given the lack of substantive guidance.

We also found the descriptions they offered of their current enterprise comforting as well. However, prudence requires keeping two things in mind: (a) who holds the Golden Share can change over time and without regulatory oversight, and (b) no precedent to our knowledge exists to provide guidance on how the interests at stake can best be protected. We therefore remain uncomfortable with: (a) the lack of specificity regarding Golden Share Holder duties, standards, and loyalties, and (b) insufficient limits on Golden Share Holder economic interests that may compete with those it exists to protect.

f. No. 38: PHI Board of Directors

Commitment No. 38 of the Stipulation of Settlement provides that:

> *PHI will have a board of directors consisting of 7 or more people. At least three members of the PHI board must be "independent" (as defined by New York Stock Exchange rules). Of the four remaining directors, at least one shall be selected from among the officers or employees of PHI or a PHI subsidiary.*

Chapter IX addresses Exelon, PHI LLC, service company, and ACE governance. It identifies the current PHI LLC board members. They include three company executives: the Exelon CEO, the Exelon Utilities CEO, and the PHI LLC CEO. The board also has four other members, generally associated with each of the four jurisdictions (New Jersey, Delaware, the District of Columbia, and Maryland). Each of these four state-associated directors qualifies as independent under Exchange rules, including the member associated with New Jersey. Exelon undertakes an annual review process to verify continuing qualification of these directors and those serving on other Exelon entity boards that include outside members.

The counterpart to this commitment in the District of Columbia requires that a majority of PHI LLC directors remain independent.

g. No. 39: Consents to SPE Bankruptcy

Commitment No. 39 of the Stipulation of Settlement provides that:

> *A voluntary petition for bankruptcy by the SPE will require the affirmative consent of the holder of the Golden Share and the unanimous vote of the SPE board of directors (including the independent director). A voluntary petition for bankruptcy by PHI will require the affirmative consent of the holder of the Golden Share, the unanimous vote of the SPE board of directors (including the independent director), and the unanimous vote of the PHI board of directors. A voluntary petition for bankruptcy for any of PHI's subsidiaries will require the unanimous vote of the PHI board of directors (including its independent directors) and the unanimous vote of the board of directors of the relevant PHI subsidiary.*

This Commitment addresses voluntary bankruptcy petitions by the following entities:

- The SPE
- PHI LLC

- The subsidiaries of PHI LLC.

The SPE board may not vote on ring-fencing related actions while an Independent Director vacancy exists. All meetings to consider such actions must occur with the Independent Director's attendance and that of all the other directors. The Independent Director must consider the interest of "the Company and its creditors" in voting on all matters.

Section 5.1(b) of the *Operating Agreement of PH Holdco LLC* (the SPE) requires unanimous director consent and the consent of the Golden Share Holder (termed the Class "B" member, as discussed above) to voluntary bankruptcy petitions and a broad range of other actions that could place the SPE into bankruptcy or similar proceedings. Section 5.1(c) requires the same consents prior to vote shares to do the same for PHI LLC.

The *Pepco Holdings LLC Limited Liability Company Agreement* requires the same consents to bankruptcy-related actions affecting PHI LLC (section 5.2.8). However, this agreement provides for the limitation differently. The sections directly say that unanimous consent of the directors is required, and refers to another section (5.1.3(e)). It takes sections 5.2.8 and 5.1.3(e) acting in concert to require Golden Share Holder consent.

Section 5.2.9 of the agreement addresses bankruptcy-related actions involving subsidiaries, such as ACE. This section requires unanimous consent of the directors, but does not require the consent of the Golden Share Holder. It makes no reference to the Section 5.1.3(e) provision that requires Golden Share Holder consent in the case of the owner of the subsidiaries, PHI LLC.

These provisions reflect the limitations required by Commitment No. 39, which preclude an SPE bankruptcy to be begun without consent of the Golden Share Holder. However, both agreements permit amendment of all terms upon consent of the Golden Share Holder (and unanimous director consent in the case of PHI LLC). No agreement we have found prohibits the Golden Share Holder from exercising its sole discretion to consent to such an elimination at any time.

The Golden Share Holder has an explicit exemption from any fiduciary or similar duty to the SPE, its owners, or those who represent it, and owes no duties other than as specified. Counsel for Exelon acknowledged that any such limitation on the Golden Share Holder's discretion would be found in the agreement. There is no such provision. Thus, the BPU can have no certain assurance that the consents written into this Commitment will be in force if and when circumstances making such consents relevant in practical terms.

h. <u>No. 40: Arm's-Length SPE Relationships</u>

Commitment No. 40 of the Stipulation of Settlement provides that:

> *The SPE will maintain arms-length relationships with each of its affiliates and observe all necessary, appropriate and customary company formalities in its dealings with its affiliates. PHI and PHI's subsidiaries will maintain arms-length relationships with Exelon and its affiliates, including the SPE.*

We found SPE actions limited to the maintenance of independence and to the flow-through of capital. Those actions focused predominantly on financial/accounting officer changes and inflows and outflows of distributions. We found SPE actions supported by documented board actions. We found brevity (as should be expected) but no lack of formality in SPE dealings.

i. No. 43: Separate SPE Books and Records

Commitment No. 43 of the Stipulation of Settlement provides that:

The SPE shall maintain its own separate books, records, bank accounts and financial statements reflecting its separate assets and liabilities. PHI and each of PHI's subsidiaries will maintain separate books, accounts and financial statements reflecting its separate assets and liabilities.

Separate SPE financial statements have regularly issued since its formation. Separate general ledger entries exist for SPE transactions. The SPE maintains a separate bank account.

j. No. 44: SPE to Comply with GAAP

Commitment No. 44 of the Stipulation of Settlement provides that: The SPE shall comply with GAAP in all material respects (subject, in the case of unaudited financial statements, to the absence of footnotes and to normal year-end audit adjustments) in all financial statements and reports required of it and issue such financial statements and reports separately from any financial statements or reports prepared for its affiliates; provided that such financial statements or reports may be consolidated with those of its affiliates if the separate existence of the SPE and its assets and liabilities are clearly noted therein.

Separate financial statements have been prepared for the SPE and separate general ledger entries exist for its transactions.

k. No. 45: SPE Liability Accounting and Management

Commitment No. 45 of the Stipulation of Settlement provides that:

The SPE shall account for and manage all of its liabilities separately from any other entity, and pay its own liabilities only out of its own funds.

The SPE has no liabilities. It maintains separate accounting and funds from which it would address any that might arise. However, management expects none.

l. No. 46: No SPE Obligation for Debts of Others

Commitment No. 46 of the Stipulation of Settlement provides that:

The SPE shall neither guarantee nor become obligated for the debts of any other entity nor hold out its credit or assets as being available to satisfy the obligations of any other entity.

Management has reported no SPE action that would obligate it so, or that would hold out its assets in the prohibited fashion. Moreover, the SPE minutes and corporate records contain no indication of board action that would have such effects. Board actions as reflected in the minutes address only officer changes and the capital inflows and outflows described in the discussion of Commitment No. 35: SPE Capitalization.

m. No. 51: No SPE Funds Commingling

Commitment No. 51 of the Stipulation of Settlement provides that:

The SPE will not commingle its funds or other assets with the funds or other assets of any other entity and shall not maintain any funds or other assets in such a manner that it will be costly or difficult to segregate, ascertain or identify its individual funds or other assets from those of its owners or any other person.

The SPE's separate bank account is the only location for funds. The SPE has no assets other than the contents of this account. Separate general ledger entries and quarterly reports make clear the identification and segregation of SPE obligations, assets, and liabilities.

No. 54: SPE Property Held in Its Name

Commitment No. 54 of the Stipulation of Settlement provides that:

The SPE shall ensure that title to all real and personal property acquired by it is acquired, held and conveyed in its name.

Management reports that the SPE has no real or personal property other than its separate bank account, and its books and records. The SPE has neither acquired nor conveyed any property other than the matching capital transactions addressed in this chapter's discussion of Commitment No. 35.

n. No. 58: Separate SPE Name and Marks

Commitment No. 58 of the Stipulation of Settlement provides that:

The SPE will maintain a separate name from and will not use the trademarks, service marks or other intellectual property of Exelon, PHI, or PHI's subsidiaries. PHI and its utility subsidiaries will each maintain a separate name from and will not use the trademarks, service marks or other intellectual property of Exelon or its other affiliates, except that PHI and each of PHI's utility subsidiaries may identify itself as an affiliate of Exelon on a basis consistent with other Exelon utility subsidiaries.

Management has reported that the SPE does not use trademarks, service marks, or similar intellectual property. None of the other documentation we reviewed in connection with the examination of these merger commitments or otherwise in performing this audit provided any contrary indication.

o. No. 59: Amending SPE Organizational Documents

Commitment No. 59 of the Stipulation of Settlement provides that:

Any amendment to the organizational documents of the SPE that would remove or alter the voting or other ring-fencing requirements described above will require the unanimous vote of the board of directors of the SPE, including the independent director, and the affirmative consent of the holder of the Golden Share.

The applicable governing documents limit amendments of organizational documents as required by this Commitment, but raise the question of whether such documents should permit abolishment of the ring-fencing Commitments, even in cases where the Golden Share Holder agrees to change them materially.

2. Conclusions

15. **No. 32: Ownership of SPE - - SPE ownership has so far conformed to the requirements of this commitment and changes in ownership are constrained by governing documents to a large extent; however, the documents do permit a result not consistent with SPE ownership requirements.** *(See Recommendation #4 immediately below)*

16. **No. 34: Limit on SPE Functions and Employees - - SPE operations conform to the function and employee limitations of this Commitment.**

The lack of employees, plans, budgets, and material income/expenditures confirm that the role of the SPE has been limited to managing equity interests in PHI LLC.

17. **No. 35: SPE Capitalization - - Overall, the SPE has maintained minimal capital, with funds transfers in and out essentially cancelling each other.**

18. **No. 36: SPE Directors - - SPE directors have so far met the requirements of this Commitment, but governing documents would allow former officers of Exelon or other Exelon affiliates above or outside the EEDC line of ownership to become independent directors.** *(See Recommendation #5 immediately below)*

19. **No. 37: Golden Share - - A generally appropriate structure exists with respect to the Golden Share and its holder, and Exelon has secured the services of an industry-leading firm; however, the absence of guidance or controls on duties, perspectives, interests to be protected, keeping utility operating entities out of bankruptcy and the like, leave the Golden Share Holder without substantive standards in exercising its responsibilities.** *(See Recommendation #6 immediately below)*

20. **No. 37: Golden Share - - The entities and individuals associated with the Golden Share do not appear to have substantial financial connections to Exelon or to any of its affiliates; however, the lack of restrictions on their having them creates a potential source of substantial conflict of interest.** *(See Recommendation #7 immediately below)*

21. **No. 38: PHI Board of Directors - - PHI LLC board membership has conformed to the requirements of this Commitment; however, the Commitment permits dilution of independent membership.** *(See Recommendation #8 immediately below)*

We found this Commitment unusual, in that it permits the PHI board to begin with a majority of non-independent members, but does not explicitly preclude dilution of independent membership through the addition of as many management members as a majority of the PHI board might choose to elect. Nevertheless, the composition of the PHI LLC board today complies with this commitment.

We discuss in Chapter IX our conclusion about the propriety (whatever the requirements of these Commitments) of ensuring that a majority of PHI LLC board members remain independent and our recommendation that the PHI LLC board make it so and that Exelon codify that requirement.

22. **No. 39: Consents to SPE Bankruptcy - - The applicable governing documents require Golden Share Holder consent for voluntary SPE and PHI bankruptcy filings; however, they permit the provisions requiring such consent to be eliminated.** *(See Recommendation #9 immediately below)*

The Golden Share Holder must consent to the elimination of its consent requirements, but it is not clear what circumstances would justify elimination of that Golden Share Holder power, which clearly forms a central part of the merger commitments related to ring fencing.

Note that the Commitment does not require Golden Share Holder consent to an ACE bankruptcy.

23. **No. 40: Arm's-Length SPE Relationships - - The SPE conducts very limited operations, minimizing relationships with affiliates; we found no indication that those relationships are handled at less than arms' length.**

24. **No. 43: Separate SPE Books and Records - - Separate books and records have been maintained for the SPE since its creation.**

25. **No. 44: SPE to Comply with GAAP - - The minimal nature of the operations and transaction categories of the SPE make its accounting very straightforward; SPE accounting has complied with GAAP.**

26. **No. 45: SPE Liability Accounting and Management - - The SPE has since its creation had no liabilities for which to account separately, but separate financial statements for the SPE have issued regularly since its creation.**

The SPE has no liabilities. It maintains separate accounting and funds from which it would address any that might arise.

27. **No. 46: No SPE Obligation for Debts of Others - - We found no basis for concluding that that the SPE has guaranteed or otherwise become obligated for the debts of any other entity, or has held out its credit or assets as available to satisfy the obligations of another entity.**

28. **No. 51: No SPE Funds Commingling - - Separate general ledger entries, quarterly financial statements, and the lack of assets outside those reflected in its separate bank account evidence asset segregation, ascertainment, and identification in a manner consistent with the requirements of this Commitment.**

29. **No. 54: SPE Property Held in Its Name - - No compliance issues have arisen under the requirements of this Commitment; the SPE has neither acquired nor conveyed property.**

30. **No. 58: Separate SPE Name and Marks - - The SPE conducts very limited operations, all documentation we have seen shows it doing so in its own name, we found no reason to believe that it uses the trademarks, service marks or other intellectual property of any other entity.**

31. No. 59: Amending SPE Organizational Documents - - The Golden Share Holder must consent to the amendments this Commitment addresses, but see the conclusion addressing Commitment No. 39: Consents to SPE Bankruptcy.

3. Recommendations

4. Amend the language of Section 2.8 of the SPE Operating Agreement to prevent a loss of EEDC direct ownership of 100 percent of the SPE from any circumstances, including but not limited to alienation or pledging of membership units for the benefit of creditors. *(See Conclusion #15 immediately above)*

Even the directors and the Golden Share Holder should not have the power to so alter the entity existing to satisfy the ring-fencing protections of the Commitments.

5. Amend Clause (ii) of Section 1.10(a)(4) of the Operating Agreement of the SPE to expand the definition of "Independent Director" so as to expressly preclude service by current or former officers of any Exelon entity as an SPE independent director. *(See Conclusion #18 immediately above)*

6. Establish a working group to discuss and seek consensus on the standards, interests, and other parameters that should guide Golden Share Holder decisions in matters requiring its assent or concurrence. *(See Conclusion #19 immediately above)*

We have our own views on the role of a Golden Share Holder in times of parent or non-utility affiliate financial distress. We believe that role should be to preclude entangling the protected, utility-related entities in proceedings intended to resolve financial difficulties not arising from within the protected entities. We agree that settling on pre-determined outcomes considering hypothetical circumstances is fraught with analytical peril, but it is nevertheless clear to us that entangling the protected entities should be virtually always the exception.

We therefore have substantial concern that no language in any document with "teeth" anywhere precludes the opposite here. Reliance on the judgment of a capable, professional Golden Share Holder is not enough. More important here than our views, however, are those of the stakeholders who crafted the commitment and of the BPU. If they face circumstances where they have to deal with the role of the Golden Share Holder, they will do so in circumstances with extremely high visibility and consequence. For this reason, we recommend an approach that begins with stakeholder dialogue, seeks consensus, and leads to BPU acceptance of a solution informed by broad participation.

7. Amend the relevant governing documents and create controls designed to preclude material economic or financial interests by all entities and individuals associated with Golden Share holding. *(See Conclusion #20 immediately above)*

The amendments should include all governing documents that address Golden Share Holder qualifications. The controls should take the form of specific contract terms with entities and individuals connected with the Golden Share. These entities and individuals include all those with direct or indirect ownership in the entity directly commissioned to serve as the Golden Share Holder. The controls should also include disclosure forms intended to identify material interests of all personnel involved or directing entities or individuals serving in the Golden Share function.

It is important to remember that entities like the one with overall responsibility for the Golden Share entity here, while serving many clients, may earn only moderate (here some $5,000 per year) fees for each. It is not hard to envision potentially much more significant economic or financial interests in an entity against whom protections like those at issue here are designed. We emphasize again, that we intend no expression of concern about the professionalism or the existence of substantial financial interests among the firms and people involved here. We simply find it appropriate to establish limits and controls appurtenant to the risks at stake.

8. **Amend the documents governing PHI LLC board membership to limit membership to seven, at least four of whom must be independent and bar the ability to change these characteristics without BPU approval.** *(See Conclusion #21 immediately above)*

Not only can four members of the board already fail to qualify as independent, but the ability to increase board size based on a majority vote of the directors enables dilution of independent membership without limit. We explain in Chapter IX our conclusion about the appropriateness of for a PHI board with a majority of independent directors. It appears to us that, at the least, the intent of the Commitment at issue here was to preserve no less than a 3/7 ratio. There are not sufficient controls to preclude dilution of even that ratio.

9. **Eliminate the power to abolish the requirement that the Golden Share Holder consent to voluntary SPE or PHI bankruptcy filings.** *(See Conclusions #22 and 31 immediately above)*

I. Ongoing Financial Commitments

Commitment Nos. 30, 47, 48, 49, 53, 55, 62, and 63 from the Stipulation of Settlement directly address ongoing financial matters, as does MFN No. 12.

1. Findings

a. No. 30: No ACE Acquisition Debt

Commitment No. 30 of the Stipulation of Settlement provides that:

> *ACE will not incur or assume any debt, including the provision of guarantees or collateral support, related to this Merger or any future Exelon acquisition.*

As discussed in Chapter XIII, ACE has not issued, incurred, or assumed any debt, or provided guarantees or collateral support for the merger with Exelon or in connection with any other Exelon acquisition.

b. No. 47: Separate PHI Utility Ratings

Commitment No. 47 of the Stipulation of Settlement provides that:

> *Each PHI utility will maintain separate debt and preferred stock, if any, so that none will be responsible for the debts or preferred stock of affiliated companies, and each will maintain its own corporate and debt credit rating as well as ratings for long-term debt and preferred stock, if any. PHI and its subsidiaries will use reasonable efforts to maintain separate credit ratings for their publicly traded securities. PHI will not issue additional long-term debt securities. In particular, PHI shall not rollover or otherwise refinance its*

> *currently outstanding long-term debt by issuing new long-term debt. PHI and its utility subsidiaries will use reasonable efforts and prudence to preserve investment grade credit ratings*

This commitment imposes the following obligations in the following eight areas:

- Separate ACE debt and preferred stock
- No ACE responsibility for debt or preferred stock of affiliates
- Separate ACE rating for corporate debt, debt greater than one year, and preferred stock
- Separate credit ratings for PHI LLC publicly traded securities
- Separate credit ratings for publicly traded securities
- No post-merger issuances of long-term PHI LLC debt
- No rollover or refinancing of PHI long-term debt existing as of merger
- Reasonable PHI LLC and ACE efforts and prudence to maintain investment-grade ratings.

Chapter XIII describes the propriety and effectiveness of PHI LLC and ACE financing generally. The work there addressed each of these requirements, finding that PHI LLC and ACE have continued to comply with each.

c. <u>No. 48: No PHI Liability for Affiliate Debts</u>

Commitment No. 48 of the Stipulation of Settlement provides that:

> *PHI will not assume liability for the debts of Exelon, the SPE, or any other affiliate of Exelon other than a PHI subsidiary. The PHI subsidiaries will not assume liability for the debts of Exelon, PHI, the SPE, the other PHI subsidiaries, or any other affiliate of Exelon. The SPE shall not acquire, assume or guarantee obligations of any affiliate. PHI will not guarantee the debt or credit instruments of Exelon, the SPE or any other Exelon affiliate other than a PHI subsidiary. The PHI utilities will not guarantee the debt or credit instruments of Exelon, PHI or any other Exelon affiliate including the SPE.*

Chapter XIII addresses PHI LLC financing. Our examination found no indication of any prohibited actions, liabilities, or other prohibited circumstances.

d. <u>No. 49: No SPE Pledge of Assets for Others</u>

Commitment No. 49 of the Stipulation of Settlement provides that:

> *The SPE shall not pledge its assets for the benefit of any other entity or make loans to, or purchase or hold any indebtedness of, any other entity. The PHI utilities will not pledge or use as collateral, or grant a mortgage or other lien on any asset or cash flow, or otherwise pledge such assets or cash flow as security for repayment of the principal or interest of any loan or credit instrument of, or otherwise for the benefit of, Exelon, PHI or any other Exelon affiliate including the SPE.*

The minutes of the SPE board of directors reflect no actions of the types prohibited, and have further been limited to changes in officers and capital flow-throughs (see the discussion under

Commitment No. 35: SPE Capitalization). Moreover management has directly affirmed that no such actions have taken place. ACE has issued no debt since the merger and it has not provided any of the forms of support prohibited by this Commitment.

e. No. 50: ACE Debt Cross Defaults

Commitment No. 50 of the Stipulation of Settlement provides that:

> *ACE will not include in any of its debt or credit agreements cross-default provisions between ACE securities and the securities of Exelon or any other Exelon affiliate. ACE will not include in its debt or credit agreements any financial covenants or rating-agency triggers related to Exelon or any other Exelon affiliate.*

The last ACE bond issuance, in December 2015, came before the merger. There have thus been no agreements that would bring this commitment into play. ACE has scheduled its next bond issuance for December 2018.

No. 53: SPE Director Approval of Funds Transfers
Commitment No. 53 of the Stipulation of Settlement provides that:

> *The SPE shall ensure that its funds will not be transferred to its owners or affiliates except with the consent and authority of the SPE board of directors.*

The SPE minutes show regular SPE board-of-directors approval of such transfers.

f. No. 55: Limits on Money Pool Participation

Commitment No. 4 of the Stipulation of Settlement allows money pool participation. Commitment No. 55 limits that participation, stating that:

> *No entities other than PHI and its subsidiaries, including the PHI utilities and PHI Service Company ("PHISCo"), will participate in the PHI utilities' money pool. The PHI utilities will not participate in any money pool operated by Exelon, and there will be no commingling of the PHI money pool funds with Exelon. Any deposits into or loans through the PHI money pool by PHI utilities shall be on terms no less favorable than the depositor or lender could obtain through a short-term investment of similar funds with independent parties. Any borrowings from the PHI money pool by a PHI utility shall be on terms no less favorable and cost effective than the PHI utility could obtain through short-term borrowings from (including sales of commercial paper to) independent parties. Exelon will give notice to the Board of Public Utilities within seven days in the event that any participant in the PHI money pool is rated below investment grade by any of the three major credit rating agencies. The documents and instruments creating the PHI money pool (and any modification thereof) will be subject to approval by the Board of Public Utilities. The Board of Public Utilities may revoke the right of ACE to participate in the PHI money pool or require a modification in order for ACE's continued full or partial participation.*

Management reported that PHISCo operates the only money pool that has existed or now exists in which ACE can participate. ACE only became a member of this pool following the merger, via a November 3, 2016 agreement (the Pepco Holdings LLC Money Pool Agreement with Atlantic City Electric Company). Only PHI, its subsidiary utilities and PHISCo may participate in the PHI money pool. No entities outside this PHI group participate. ACE lacks authority to and it does not participate in any money pool operated by Exelon. There is no commingling of PHI money pool funds with any Exelon funds.

PHI LLC and the participants may make deposits to the pool. The rates for deposits into and borrowings from the pool are at a single, common rate. The agreement limits ACE deposits and borrowings to cases where it cannot secure more favorable terms in the available markets. PHI LLC may not borrow from the pool, and guarantees repayment to depositors. All PHI LLC utilities may become members by executing a similar agreement, but the terms of the agreement do not explicitly exclude membership by non-utility affiliates. ACE has to date made no deposits into or borrowings from this pool or any other involving affiliates. No PHI money pool participant has, since the merger, been rated below investment grade by any of the three major credit rating agencies.

The MFN order observed that the documents creating the money pool had been filed with it on April 22, 2015, and that Staff had reviewed them. The BPU approved the documents in the MFN Order.

g. No. 62: Dividends if Below Investment Grade

Commitment No. 62 of the Stipulation of Settlement provides that:

> *ACE shall not make any distribution to its parent if ACE's corporate issuer or senior unsecured credit rating, or its equivalent, is rated by any of the three major credit rating agencies below investment grade.*

ACE has not experienced credit ratings below the minimum required by this Commitment since the merger close.

h. No. 63: Equity Maintenance Reports to BPU

Commitment No. 63 of the Stipulation of Settlement provides that:

> *ACE shall file with the Board of Public Utilities, within 5 business days after the payment of a dividend, the calculations that it used to determine the equity level at the time the board of directors considered payment of the dividend and the calculations to demonstrate that the common equity ratio immediately after the dividend payment did not fall below 48%, as equity levels are calculated under the ratemaking precedents of the Board of Public Utilities.*

ACE provided letters to the PBU showing dividend payments and calculations. We examined documentation showing seven dividend payments from the Spring of 2016 through the end of 2017. The letters to the BPU all fell well within the required notification dates and the calculations demonstrated compliance within the minimum equity requirements (48 percent) of Commitment No.61 of the Stipulation of Settlement addressing ACE Dividends Subject to Minimum Equity Maintenance.

i. MFN No. 12: Minimum Equity Ratio Maintenance

Commitment No. 61 of the MFN Joint Recommendation provides that:

ACE will not pay dividends to its parent company if, immediately after the dividend payment, its common equity level would fall below 48%, as equity levels are calculated under the ratemaking precedents of the Board of Public Utilities.

Provision 12 of the MFN Joint Settlement supersedes Commitment No. 61. MFN Provision 12 provides that:

ACE shall maintain a rolling 12-month average annual equity ratio of at least 48%. ACE will not pay dividends to its parent company if, immediately after the dividend payment, its common equity level would fall below 48%, as equity levels are calculated under the ratemaking precedents of the Board. This paragraph revises and supersedes paragraph 61 of the Stipulation of Settlement.

The documents described in this chapter's discussion of Commitment No. 63: Reports on Equity Maintenance to BPU provide calculations showing that the payment of dividends conformed to this requirement. Moreover, the examination of financial matters described in Chapter XIII of this report disclosed no concerns about compliance with the requirements of this Commitment.

2. *Conclusions*

32. No. 37: No ACE Acquisition Debt - - ACE has not issued, incurred, assumed, guaranteed, or supported any merger-related debt.

33. No. 47: Separate PHI Utility Ratings - - PHI LLC and ACE have maintained the required debt, preferred stock, and ratings separation, PHI LLC has not issued, rolled over, or refinanced debt covered by the requirements of this commitment, and PHI LLC and ACE have acted reasonably in maintaining investment-grade ratings.

34. No. 48: No PHI Liability for Affiliate Debts - - PHI LLC and ACE, have not assumed liability for or guaranteed any debt covered by this Commitment. and the SPE has not acquired, assumed or guaranteed any affiliate obligations.

35. No. 49: No SPE Pledge of Assets for Others - - The SPE and ACE have so far complied with the debt-related requirements imposed by this Commitment.

The SPE has made no pledge of assets, or otherwise engaged in the indebtedness-related actions addressed by this Commitment; ACE undertaken none of the actions prohibited by this Commitment with respect the indebtedness of Exelon, PHI LLC, the SPE or any other Exelon affiliate.

36. No. 50: ACE Debt Cross Defaults - - With no ACE bond issuances since the merger, there has been no occasion for the application of the requirements of this Commitment.

37. No. 53: SPE Director Approval of Funds Transfers - - Documented, signed resolutions maintained by the SPE demonstrate compliance with the requirements of this Commitment.

38. **No. 55: Limits on Money Pool Participation - - The actions taken, the agreements existing, and our examination described in Chapter XIII demonstrate compliance with the requirements of this Commitment.**

39. **No. 62: Dividends if Below Investment Grade - - This Commitment has not had application because ACE has not experienced credit ratings below the minimum required.**

40. **No. 63: Equity Maintenance Reports to BPU - - ACE has made timely filings of the equity maintenance reports required by this Commitment.**

41. **MFN No. 12: Minimum Equity Ratio Maintenance - - Dividend declarations by ACE have conformed to the requirements of this Commitment.**

3. Recommendations

We have no recommendations regarding Stipulation of Settlement Commitment Nos. 30, 47, 48, 49, 53, 55, 62, and 63 or Joint Recommendation (MFN) Commitment No. 12, which address ongoing financial matters.

J. Ongoing Reliability Commitments

Commitment Nos. 14 and 16 directly address ongoing ACE service-reliability.

1. Findings

a. <u>No. 14: SAIFI/CAIDI Target</u>

Commitment No.14 of the Stipulation of Settlement provides that:

> *ACE will achieve the following reliability performance levels by 2020, based on a three-year historical average calculated over the 2018-2020 period (excluding major events as calculated consistent with the methodology currently utilized by the Board of Public Utilities): (a.) the System Average Interruption Frequency Index ("SAIFI") will not exceed 1.05 interruptions; and (b.) the Customer Average Interruption Duration Index ("CAIDI") will not exceed 100 minutes. If this level of reliability improvement is not achieved across either SAIFI or CAIDI, the return on equity to which ACE would otherwise be entitled in its next electric distribution base rate case filed after January 1, 2021, will be reduced by fifty (50) basis points. The return on equity reduction would apply throughout the period that the rates established by that rate proceeding are in effect, and ACE would be required to initiate a new base rate proceeding and obtain an order from the Board approving new rates to end the return on equity penalty.*

The first consequential measurement called for by the Commitment will take place when SAIFI and CAIDI data for 2020 become available. Nevertheless, the next table shows that ACE has reported for the three years ending in 2017 performance that would meet the standard. Moreover, performance for 2017 exceeded the 2015-2017 average, demonstrating continuing improvement.

We examine operations and reliability in detail in Chapters VI and XVII.

ACE SAIFI/CAIDI Performance

Period	SAIFI	CAIDI
2018-2020 Target	≤1.05	<100
2015-2017 Actual	1.02	88
2017 Actual	0.86	76
2013 Reference Point*	0.85	91

* From Commitment No. 13 above

b. No. 16: Reliability Improvement Plan Continuation

Commitment No.16 of the Stipulation of Settlement provides that:

> *In order to meet the reliability commitments in Paragraph 14, ACE agrees to continue the programs identified in the RIP through 2021. Specifically, ACE will continue to implement the following component programs of the RIP: Vegetation Management, Priority Feeders, Load Growth, Distribution Automation, Feeder Improvement and Substation Improvement. ACE will also continue the reporting requirements of the RIP through 2021 and will continue to offer to meet quarterly with Board Staff and Rate Counsel. The forecasted budget for reliability spending for ACE from 2016 through 2019 is contained in Table One below and will be updated for 2020 and 2021 when it becomes available. During the period 2016 through 2021, ACE commits to spend at least 90% of the aggregate budget amount over those six years, adjusted to reflect actual synergy savings net of costs to achieve. The Parties acknowledge that ACE is free to move resources between the spending categories noted below, and between budget years, to address reliability conditions and needs as they arise. Beginning six months after the closing of the Merger, ACE commits to provide reports to Rate Counsel and Board Staff on a semi-annual basis indicating its spending levels under this provision. Information regarding base distribution capital spending is provided for reference purposes only in Exhibit One to this Stipulation.*

Management provided a series of semi-annual reports that address budgets, expenditures, and variance explanations by the individual Reliability Improvement Program components. The preceding discussion of Commitment No.16 describes our finding of appropriate reporting, and we address the reliability programs and activities identified in this Commitment, among others, in Chapters VI and XVII.

The chart below shows 2020 and 2021 spending forecasts reported by ACE as the most current.

Reported RIP Expenditure Forecasts

Sub-program	**Reliability Improvement Program (RIP) Forecast from Merger Stipulation of Settlement**							
	Original Forecast							
	2014	**2015**	**2016**	**2017**	**2018**	**2019**	**2020 Forecast**	**2021 Forecast**
Priority Feeders	7.8	5.0	10.0	10.0	10.0	5.0	4.5	4.5
Load Growth/Capacity Expansion	20.1	7.4	23.2	19.4	23.5	30.8	22.4	13.8
Distribution Automation/T&D Automation	3.3	3.3	10.6	8.6	8.6	6.1	6.0	6.3
Feeder Improvement/System Performance	6.7	4.7	7.5	8.0	8.5	5.5	21.9	21.4
Substation Improvement	3.6	1.5	3.8	4.6	2.3	0.7	10.9	11.3
Total RIP Program Spending	**41.5**	**21.9**	**55.1**	**50.6**	**52.9**	**48.0**	**65.8**	**57.2**
Vegetation Management (O&M Expense)	14.6	14.6	14.6	14.6	14.6	14.6	25.8	24.5
Note: Amounts are in millions of dollars								

2. Conclusions

42. No. 14: SAIFI/CAIDI Target - - The first measurement called for by the commitment will come in 2020.

Performance has been improving; however, performance over the three years ending in 2017 performance would meet the standard, and performance has experienced continuing improvement.

43. No. 16: Reliability Improvement Plan Continuation - - Management has complied by continuing the program components, by providing reports of budgets, expenditures, and variance explanations, and by providing current forecasts for 2020 and 2021.

We address overall reliability program and activity effectiveness and efficiency in Chapters VI and XVII.

3. Recommendations

Liberty has no recommendations with respect to Commitment Nos. 14 and 16, which address ongoing reliability of service at ACE.

K. Ongoing Customer-Service Commitments

Commitment Nos. 17, 24, and 26 from the Stipulation of Settlement directly address ongoing customer service, as do MFN Nos. 3B and 3D.

1. Findings

a. No. 17: Customer Service Issues

Commitment No.17 of the Stipulation of Settlement provides that:

> *For a period of five years following the closing of the Merger, ACE will continue to meet with Board Staff and Rate Counsel on a quarterly basis regarding customer service-related issues, and to continue the reporting requirements contained in the Customer Service Improvement Plan established in BPU Dkt. No. ER09080664, Order dated May 16, 2011. ACE agrees for the five years following the closing of the Merger, it will conduct 6,500 Moment of Truth surveys annually beginning in 2015 unless Board Staff and Rate Counsel agree a fewer number of surveys can be conducted. In 2016, ACE will institute measures and devote additional resources to comply with the Board's directive to have "no more than 1,500 customer complaints per year reported to the Board by its customers." Within six months following the closing of the Merger, ACE will provide to Board Staff and Rate Counsel an update regarding the status of its approach on how it will reduce its customer complaints. ACE will focus on its high level of customer credit complaints and determine the corrective action needed to reduce future re-occurrences. Its Root Cause Analysis Overview (RCR-CI-19 Attach42) provides a reasonable outline of an approach to address and resolve frequently recurring customer issues such as credit related complaints. ACE will provide to Board Staff and Rate Counsel its plan to implement its Root Cause Analysis within three months from the closing of the Merger. ACE will include in a quarterly report to Board Staff and Rate Counsel, among other information, the number and cause of complaints reported to the Board by its customers each calendar quarter.*

This Commitment requires actions in eight areas. We reviewed compliance with them from a technical perspective. However, to the extent that the required actions bear upon customer service management and operations, Chapter XV addresses their relationship to and impacts on the effectiveness and efficiency of customer service delivery. For example, if providing a report or an update comprises an element of merger commitment compliance, here we assess whether the report or update covers the required subjects. We do not in this chapter assess whether the actions described conform fully to good utility practice or customer service needs and expectations. Chapter XV provides that assessment. This Commitment addresses the eight following areas:

1. Continuation for five years following merger close of quarterly meetings with Board Staff and Rate Counsel regarding customer service-related issues
2. Continuation Customer Service Improvement Plan reporting requirements
3. Conduct for five years following merger close of 6,500 Moment of Truth surveys annually (absent agreement to a lower number)
4. 2016 institution of measures and application of additional resources to produce less than 1,500 customer complaints reported to the Board annually
5. An update within six months following merger closing to BPU Staff and Rate Counsel on status of efforts to reduce customer complaints
6. Focus on ACE's high level of customer credit complaints to determine actions needed to reduce future re-occurrence.
7. Submission within three months of merger close to Board Staff and Rate Counsel of a plan to implement Root Cause Analysis.
8. Quarterly reporting to Board Staff and Rate Counsel, among other information, of the number and cause of BPU complaints reported by customers.

The first area this requirement addresses requires continuation of quarterly customer-service meetings with Board Staff and Rate Counsel. The second area requires continuation of Customer Service Improvement Plan reporting requirements. The meetings have continued, and they have been accompanied by presentations from management addressing reliability, customer care, and complaints. We reviewed the agendas and presentations from a series of recent meetings. Substantial presentation packages containing data summations and narrative discussions and analyses have accompanied the agendas for the meetings. Subjects addressed have included:

- Reliability Improvement Plan
- Complaints Review & Breakdown
- Complaints Root Cause Analysis
- Moment of Truth Survey Results
- Customer Courtesy Centers
- Slow & Non-Registering Meters
- Deferred Payment Arrangements
- Post-Bankruptcy Arrangements
- Service Appointments
- Service Level Guarantee Reports.

The third area addressed by this requirement calls for continuation of at least 6,500 Moment of Truth Surveys. Management reported 6,301 surveys for 2016 at its March 2017 quarterly update on customer service and reliability improvement plans. The update provided a very brief summary of results. The number of reported surveys and description of their results expanded in 2017. Management provided an ACE Moment of Truth Survey Update-Revised, Year-End 2017. The update lists 6,520 interviews with ACE customers, breaks down the total by type, and provides a summary of results.

The fourth area called for implementation in 2016 of measures and the application of additional resources to produce less than 1,500 customer complaints reported to the Board annually. The fifth element of this requirement called for an update within six months of merger closing on the status of efforts to reduce customer complaints. Management provided an ACE presentation titled *BPU Complaint Reduction Update*. Its May 25, 2016 date came about two months following merger close. The presentation described the approach to and methods of root cause analysis of customer complaints, actions taken, resources added, and next steps.

Management also provided a September 7, 2016 *ACE Report on the Effectiveness of Its Plan to Implement Its Root Cause Analysis*. This report describes the approach and process to root cause analysis, breaks complaints down by category, and summarizes actions to identify and address the root causes of each. We viewed these documents as explaining the measures and identifying the resources associated with the fourth area addressed by this Commitment No.17. They also served to provide the update required by the fifth area.

The sixth area covered by this Commitment No.17 calls for focus on the high level of customer credit complaints and determining actions to reduce them. Credit-related root cause analysis, resource additions, examinations of alternatives, and changes provide a recurring item of discussion in the September 2016 *ACE Report on the Effectiveness of Its Plan to Implement Its Root Cause Analysis*. We found the document sufficiently focused on credit problems as a unique source of issues, causes, and solutions.

The seventh area calls for providing, within three months of merger close, a plan to implement Root Cause Analysis. Management provided ACE's *Plan to Implement Its Root Cause Analysis*, dated June 7, 2016. This document presented a reasonably clear and complete description of ACE's plans for implementing root cause analysis. Moreover, as the discussion of the earlier elements above demonstrates, describing the plans, methods, and results of root cause analysis has been an ongoing element of ACE presentations and reporting.

The eighth area addressed by this requirement requires quarterly reporting to Board Staff and Rate Counsel of, among other information, the number and cause of BPU complaints reported by customers. Management provided reports, generally used as well in quarterly meetings with BPU Staff and Rate Counsel, containing the required information.

b. <u>No. 24: Low-Income Assistance</u>

Commitment No. 24 of the Stipulation of Settlement provides that:

> *ACE will maintain, enhance and promote programs that provide assistance to low-income customers.*

ACE operates a number of low-income assistance programs described under MFN Commitment No. 3D below. These programs add to four major programs that ACE has supported traditionally and that it continues to support:

- The BPU-created and New Jersey Department of Community Affairs (DCA) administered Universal Service Fund (USF) program, which helps make electric and natural gas bills more affordable for low-income families
- LIHEAP, the Low Income Home Energy Assistance Program (LIHEAP) offering initiatives to help families with energy costs through federally-funded assistance managing the costs of home energy bills, energy crises, and weatherization and energy-related minor home repairs
- New Jersey SHARES, operated by a statewide non-profit corporation and providing assistance to those with low and moderate income in meeting energy and utility bills
- The Affordable Housing Alliance, which offers a program to help individuals and families seeking relief in paying gas, electric, and oil bills.

A dedicated, PHI LLC-level organization addresses customer advocacy issues. It provides outreach, education, support, and eligibility assistance. This group focuses principally on low-income customers, taking the form of outreach, directly with customers and with the groups and organizations that support them. This work seeks to promote knowledge of assistance availability to help customers in determining and seeking qualification for assistance, and to direct them to sources of assistance. The organization has recently enhanced its focus on outreach by designating a manager for the nine people engaged in direct contact with customers and support-providing agencies and organizations public and private. Two bi-lingual representatives have been added to the outreach function.

PHI LLC is also conducting or has requested approval to initiate pilot programs seeking to enhance efforts to assist low-income customers. One of them consists of outbound contacts to customers with greater than $100 arrearages, designed to detect means of identifying potential needs for outside assistance and directing them to available sources. Another offers a level of arrearage forgiveness for customers who meet payment commitments following counseling and education about energy usage and managing to payment budgets. A particular strength of this latter is its focus not just on payment, but on managing usage effectively.

c. MFN No. 3B: Funding for Low-Income Customer Support

Provision 3.b. of the MFN Joint Recommendation provides that:

> *The Joint Petitioners will provide a total of $4,000,000 in equal installments over a four-year period in funding to agencies to support low-income customers in the ACE service territory. Within sixty days after the issuance of an Order of the Board approving this Joint Recommendation, the Joint Petitioners will disburse grants of $250,000 to each of the following four organizations: the Affordable Housing Alliance, Catholic Charities of the Diocese of Camden, New Jersey SHARES, and The People for People Foundation of Gloucester County. The Joint Petitioners will then make annual grants for three additional years of $250,000 to each of these organizations. The agencies will utilize these funds to provide direct grants of up to $200 to ACE residential customers who require assistance*

in paying their ACE electric bills. Eligible residential customers will be able to receive one grant per 12-month period. Eligibility will be determined on an individual basis by the four organizations above; and absent extreme hardship, emergency or family crisis, an eligible individual's household income should not exceed 400% of the Federal Poverty Level. Once per year, the Joint Petitioners will include information indicating the annual amounts provided to each organization and the actual amount of the grants provided to eligible residential customers in the quarterly report provided to Board Staff and Rate Counsel in the Customer Service Improvement Plan established in BPU Docket No. ER09080664. The first quarterly report to include this annual spending information will be provided no later than the first quarterly report filed in 2018.

Management provided ACE's *First Annual Economic Benefits Report*, under cover of a March 31, 2017 letter. Its discussion of low-income assistance efforts cited partnerships for electric assistance programs with four organizations: Affordable Housing Alliance, NJ Shares, Catholic Charities of the Diocese of Camden, and People for People Foundation of Gloucester County. The discussion cited annual ACE grants of $250,000 to each of the four over a four-year period. The report noted the inception of these grants on Jan 9, 2017.

d. MFN No. 3D: Energy-Efficiency Programs for ACE Customers

Commitment No. 8 of the MFN Joint Recommendation provides that:

The Joint Petitioners commit to pay for and implement, over a five-year period following closing of the Merger, energy-efficiency programs (including energy-efficiency programs directed to benefit low-income customers) that are projected to yield a total of $15 million in savings to ACE customers over the life of the measures. Within six months following the closing of the Merger, the Joint Petitioners will submit to Board Staff and Rate Counsel a detailed description of the energy-efficiency programs to be implemented pursuant to this Paragraph. Beginning in June, 2016, and annually for the next five years, Joint Petitioners will report to the Board on the dollar value of the savings achieved. The Parties agree that savings generated by the energy-efficiency programs will be measured in accordance with the Mid- Atlantic Technical Reference Manual using Evaluation Measurement and Verification best practices used by regulatory jurisdictions across the country.

The MFN Order superseded the funding requirements of this Commitment. Provision 3.d. of the MFN Joint Recommendation provides that:

The Joint Petitioners agree to spend $15,000,000 over five years (through March, 2021) to provide energy-efficiency programs in the ACE service territory, ACE will direct the energy-efficiency programs and will include programs targeting low-income customers and economically-challenged towns and cities. This spending level represents an incremental increase in spending of approximately $7.5 million on energy-efficiency programs over the five-year period as a result of the reconciliation of the MFN Provision. No later than 120 days after the Board issues an order approving this Joint Recommendation, the Joint Petitioners will submit to Board Staff and Rate Counsel a detailed description of the energy-efficiency programs to be funded pursuant to this provision, including a plan to provide $1.5 million in program funding by March 31, 2017. Beginning in September, 2017, and once each year for the next four years thereafter (through September, 2021), the Joint Petitioners will include information indicating the

> *actual annual spending and programs implemented pursuant to this provision in the report on reliability spending provided to Board Staff and Rate Counsel pursuant to Paragraph 16 of the Stipulation of Settlement. Paragraph 8 of the Stipulation of Settlement (addressing the provision of energy-efficiency savings) shall be superseded by the recommended commitment contained in this paragraph.*

Commitment No. 3d of the MFN supersedes original Commitment No. 8, measuring compliance by an input (dollars spent) versus an output (benefits produced)-based commitment. Counsel for ACE filed with the BPU under cover of a June 30, 2016 letter a blank template showing the kinds of information to be reported to show savings achieved. That submission observed that the programs had not yet been submitted to the BPU for approval, making a definitive report on savings achieved impossible.

A subsequent report from Counsel for ACE came under a March 9, 2017 letter to the BPU, and reported that ACE and PHI representatives met on March 3, 2017 with BPU Staff and Rate Counsel to review an energy efficiency proposal management intended to adopt in fulfillment of this Commitment. The letter from counsel included an attachment providing descriptions of the programs proposed by ACE. The March 2017 report described the two programs to be funded, with expenditures through 2021: (a) $8.7 million for the Residential Quick Home Energy Program for low-income customers, and (b) $6.3 million for OPower's Residential Behavior Based program for low income areas and high energy users. The report described the basis for choosing these programs, their design, and projection of benefits to be obtained. The report did not report the inception of expenditures on either program at that time.

ACE made another filing in September of 2017, and anticipates the next one in September 2018. The September 2017 document provided a semi-annual spend report on RIP and an annual spend report on Energy Efficiency Programs. It reported actual 2017 spending through the end of August at $1,528,541 for the Residential Behavior Based program, with no expenditures on the other. Considering that program start-up had occurred over the half year or so covered by these expenditures, we found outlays at a pace commensurate with the five-year total obligation of $15 million. The latest information from management shows that the pace of expenditures still needs to increase, particularly for the Quick Home Energy program, but the still-early stages give ample time for reaching the required level of expenditures.

e. No. 26: Energy Efficiency

Commitment No. 26 of the Stipulation of Settlement provides that:

> *PHI and ACE will maintain and promote energy efficiency and demand response programs consistent with the direction of the Board of Public Utilities.*

Chapter XV addresses the operations and activities of ACE with respect to the two programs discussed under the immediately preceding commitment. It also addresses them more generally. That chapter describes the programs that ACE supports and how it supports them. It also addresses a number of improvement opportunities.

2. Conclusions

44. No. 17: Customer Service Issues - - Management has so far complied with the eight elements of this commitment.

It remains important nevertheless to recognize that future circumstances may affect the nature and contents of the required reporting. We address generally customer service management and operations effectiveness and efficiency in Chapter XV.

45. No. 24: Low Income Assistance - - ACE has maintained its existing commitments to programs to assist low-income customers, and has since the merger enhanced them.

ACE has added resources to its customer advocacy group, and undertaken pilot programs intended to identify effective means for improving the effectiveness of such assistance.

This chapter addresses the direct question of whether ACE has maintained and enhanced its existing efforts, as measured by resources employed and programs and initiatives offered. Chapter XV addresses customer service effectiveness overall.

46. MFN No. 3B: Low-Income Customer Funding - - Management's established partnerships with four organizations call for four-year funding of $1 million for each, which comports with the commitment.

47. MFN No. 3D: Energy Efficiency Programs - - ACE has adopted two programs to comply with this recommendation; plans for funding them comport with the requirements of the commitment but have yet to reach full speed. *(See Recommendation #10 immediately below)*

Expenditures have not yet reached a pace commensurate with required annual spends; however, it appears reasonable to expect means for achieving rates of future progress that will support expenditure of the full $15 million over the five-year duration.

48. No. 26: Energy/Energy Efficiency - - Management does generally maintain and support energy efficiency and demand response programs; however, the scalability of its organization to address the requirements and expectations of recent New Jersey legislation is unclear. *(See Recommendation #11 immediately below)*

Moreover, as Chapter XV details, some improvement opportunities exist to enhance its ability to support current statewide programs.

3. Recommendations

10. Develop and monitor specific plans for increasing the pace of Quick Home Energy customer-facing activities. *(See Conclusion #47 immediately above)*

See Chapter XV for and explanation of the need for such plans.

11. Provide a better-directed web experience for customers seeking energy efficiency and demand-response programs and develop a rapid-response capability to scale the organizations who will have substantial responsibility for implementing requirements and programs and meeting expectations created by recent New Jersey legislation. *(See Conclusion #48 immediately above)*

See Chapter XV for and explanation of the need for such plans.

L. Ongoing Operations Commitments

Commitment Nos. 19, 25, and 71 from the Stipulation of Settlement directly address ongoing operations.

1. *Findings*

a. No. 19: Headquarters Location

Commitment No. 19 of the Stipulation of Settlement states that:

> *ACE will maintain its local operational headquarters in Mays Landing, New Jersey.*

PHI LLC, PHISCo, and ACE continue to operate from a variety of locations, as they did before the merger. Management reported no diminishment in operations leadership, functions, or overall resources operating from ACEs' Mays Landing location. Our examination of management and operations disclosed none.

b. No. 25: Charitable/Community

Commitment No. 25 of the Stipulation of Settlement provides that:

> *In New Jersey, Exelon and its subsidiaries shall, during the ten-year period following consummation of the Merger, provide at least an annual average of charitable contributions and traditional local community support that exceeds PHI's and ACE's 2013 level of $709,000.*

ACE's *First Annual Economic Benefits Report* (addressing the year 2016) cited ACE contributions, in conjunction with Exelon, of $882,131 to New Jersey organizations. The report also cited a one-time contribution of $350,000 to Customer Advocates of PJM States, Inc. (described as not specific to ACE). Management provided for on-site review the list of individual ACE charitable contributions for 2016 and 2017. The 2016 list identified approximately 250 different gifts to organizations. Gifts totaling $882,131 included a broad range of organizations with connections to the ACE service territory. The list for 2017 showed a similarly broad and ACE-connected range of some 350 organizations, to whom gifts totaled $1,104,828.

c. No. 71: Delegations of Authority to PHI Officers

Commitment No. 71 of the Stipulation of Settlement provides that:

> *Upon the effective date of the proposed Merger, PHI and its utility subsidiaries will adopt delegations of authority setting forth the authorizations of officers of PHI and its utility subsidiaries to act on behalf of PHI and its utility subsidiaries without further authorization from Exelon Corporation. The proposed delegations of authority for PHI and its utility subsidiaries are set forth on Table Two. The delegations of authority for ACE adopted by PHI will not be amended to reduce authorization levels of ACE officers without prior notice to the Board of Public Utilities.*

The Exelon Corporation Delegation of Authority Policy (LE-AC-11; Revision 8), effective January 31, 2017 and subject to annual revision, sets forth the authority delegations to the holding company's subsidiaries, including PHI LLC. The delegations applicable to PHI LLC have remained constant since March 23, 2016. The table on page 44 of this document contains a list of authority delegations fully consistent with that required by paragraph 71, Table 2 of the Stipulation of Settlement. The policy's terms require an annual review. The grid (the dollar limits) have remained stable for some time and are the same for all utilities Exelon-wide.

2. Conclusions

49. No. 19: Headquarters - - ACE has continued to maintain its local operational headquarters in Mays Landing, as this commitment requires.

50. No. 25: Charitable/Community - - ACE has so far made the required level of charitable contributions and local community support.

51. No. 71: Delegations of Authority - - Management has adopted and has so far maintained delegations of authority to PHI LLC and ACE in a manner and at levels consistent with the requirements of this commitment.

3. Recommendations

Liberty has no recommendations with respect to Stipulation of Settlement Commitment Nos. 19, 25, and 71, which address ongoing operations.

M. Ongoing Employee and Supplier Commitments

Commitment Nos. 22 and 23 from the Stipulation of Settlement directly address ongoing employee or supplier diversity matters, as do MFN Nos. 3C, 6 and 7.

1. Findings

a. <u>No. 22: Outplacement Services</u>

Commitment No. 22 of the Stipulation of Settlement provides that:

> *Joint Petitioners agree to provide outplacement services to employees terminated as a result of the Merger. As set out in the respective severance policies of Exelon and PHI, Exelon employees will be provided with access to outplacement services, and PHI employees will receive an unrestricted cash payment (based on years of service), in addition to their severance payments, which can be used for outplacement services. Any expenses incurred for outplacement services for executives shall be deemed a transaction cost.*

Management provided Exelon's Human Resource Process Staffing, Retention and Selection – Mergers & Acquisitions Procedure. It lays out a structured process for identifying post-combination needs and methods for addressing them. The procedure employs the term "Displaced Employee," defined as one "…not selected into an interim or end-state permanent role." However, management has reported that Exelon terminated no employees as a result of the merger, thus requiring no outplacement services or costs.

Management also provided the Old PHI 2014 *Management Employee Severance Plan and Summary Description*. This plan provides for the following payments to management employees in the event of terminations not for cause and of voluntary departures for good cause (material responsibility or duties reduction, work relocation, or base salary reduction) through the second anniversary of merger closing:

- Lump sum severance cash payment in an amount equal to the departing employee's weekly salary multiplied by years of participation in an Old PHI retirement plan times two
- An amount equal to the departing employee's target-level annual bonus, prorated for mid-year departure
- $10,000 for employees with more than five years of service and $5,000 for those with less than five.

This plan recognizes the existence of other severance arrangements for some management employees, limiting benefits that such employees can receive under this plan.

Management included cash payments to PHI LLC employees in a merger severance accrual recorded in March 2016.

b. No. 23: Supplier Diversity

Commitment No. 23 of the Stipulation of Settlement provides that:

> *ACE will honor and maintain its commitment to support programs to increase supplier diversity.*

Management provided Exelon's Supplier Diversity Procedure, which operates under the direction of Exelon's Diverse Business Empowerment ("EDBE") Office. The procedure assigns responsibilities, calls for the establishment and measurement of goals, identifies tools and methods for diverse supplier use, participation, and development, and provides for reports of spending made through diverse suppliers. The next table demonstrates that ACE has both increased and met its diverse spend targets since the merger.

ACE Targeted and Actual Diverse Spends

Year	Goal		Actual	
	Percent	Dollars	Percent	Dollars
2015	12%	$33.5	4%	$11.3
2016	9%	$20.1	13%	$29.0
2017	16%	$40.7	17%	$43.0
2018	20%	$65.0		

Old PHI's approach to setting goals for its utilities used availability of diverse suppliers by category, historical diverse spends, projected spends, and competitive bidding to set targets for each product or service category. Availability of diverse suppliers comprised a principal driver of the range of targets among the categories. The post-merger approach employed historic spends and projected work. The 2018 ACE goal of 20 percent is below those of the other two PHI utilities - - 28 percent at Pepco and 22 percent at Delmarva.

c. MFN No. 3C: Funding for Workforce-Development

Provision 3C of the MFN Joint Recommendation provides that:

> *Within 60 days after the issuance by the Board of an Order approving this Joint Recommendation, Joint Petitioners will provide Board Staff and Rate Counsel with a detailed program of proposed workforce-development initiatives, focusing on programs providing the skills needed for jobs within the public utility industry. Within 60 days after the Joint Petitioners, Board Staff and Rate Counsel agree upon the recipients of the workforce-development funds, the Joint Petitioners will provide a total of $6,542,173 in installments over a six-year period to fund workforce-development initiatives in the ACE service territory.*

The first ACE annual *Economic Benefits Report* states that management provided a list of proposed recipients and funding to BPU Staff and to Rate Counsel in December 2016. Management's first annual employment report cited recommended specific initiatives with proposed funding in total matching the required amount. The 2017 annual employment report listed these initiatives as "still in progress." The widely-respected Center for Energy Work Force Development developed three of the programs for industry-wide implementation. The fourth (line-school) uses a program developed at another utility. The fifth would provide funding for Workforce Development board programs in Atlantic, Camden, and Gloucester Counties, and Cumberland, Salem, and Cape May. The programs and funding levels identified in the 2017 report comprise:

- Get into Energy Math and Test Preparation Workshop ($360,000)
- Women in Sustainable Employment Pathways ($360,000)
- High School Energy Career Academy ($1.35 million)
- ACE Line School (an entity to be developed) ($1.5 million)
- Workforce Development Board training programs ($2,972173).

The first of the CEWFD-designed programs seeks to improve the pool of applicants for difficult-to-fill skilled craft positions by providing preparation designed to improve success in required pre-employment testing. The second seeks to promote diversity and inclusion in the energy workforce by providing a career exploration work course for women. The third offers high-school students a link between academic offerings and career themes. The creation of an ACE Line School would provide hands-on instruction to those seeking careers in line work.

ACE reported approval of its recommended entities to receive funding in March 2018. Those entities included the four Workforce Development Boards, and three New Jersey high schools.

The 2017 report also cited participation in a number of other, ongoing workforce development efforts:

- Offering of 19 training and leadership development programs for employees - - with participation in 1,600 of them
- Participation in 23 outreach events by recruiters
- Relationships with 177 agencies that received ACE job postings (52 in New Jersey)

- Employee service on the boards of directors of 23 New Jersey people and economic development organizations
- 78 college and 15 high school internships (5 and 2 respectively in New Jersey).

d. MFN No. 6: Bargaining Agreements, Attrition, Hiring

Commitment No. 20 of the Stipulation of Settlement states that:

ACE will honor all existing collective bargaining agreements. Upon approval of the Merger and for at least the first two years following consummation of the Merger, Exelon will not permit a net reduction, due to involuntary attrition as a result of the Merger integration process, in the employment levels at ACE. For years three through five following the closing of the Merger, ACE will not permit a net, involuntary reduction due to the Merger integration process greater than a total of twenty-five (25) ACE positions. For at least the first five years following the consummation of the Merger, Exelon will provide current and former ACE employees compensation and benefits that are at least as favorable in the aggregate as the compensation and benefits provided to those employees immediately before April 29, 2014, or to the compensation and benefits of Exelon employees in comparable positions. PHI and ACE will also continue their commitments to workforce diversity. If, and only if, the Merger of PHI and Exelon obtains all necessary approvals and closes, ACE agrees to hire a minimum of sixty (60) bargaining-unit employees and to make a good faith effort to do so during the twenty-four (24) month period after the Merger closes. Those sixty (60) bargaining-unit employees will not be among the twenty-five (25) ACE positions that may be involuntarily reduced due to the Merger integration process in years three through five following the closing of the Merger.

The MFN Merger Order supersedes this Commitment. Provision 6 of the MFN Joint Recommendation states that:

ACE will honor all existing collective bargaining agreements. For at least five (5) years after Merger close, Exelon shall not permit a net reduction, due to involuntary attrition as a result of the Merger integration process, in the employment levels at ACE's utility operations in New Jersey. "Involuntary attrition" includes transfer-or-quit offers where the employee decides to quit or retire rather than being transferred to a work location outside of New Jersey. For at least the first five (5) years following the consummation of the Merger, Exelon will provide current and former ACE employees compensation and benefits that are at least as favorable in the aggregate as the compensation and benefits provided to those employees immediately before April 29, 2014, or to the compensation and benefits of Exelon employees in comparable positions. PHI and ACE will also continue their commitments to workforce diversity. If, and only if, the Merger of PHI and Exelon obtains all necessary approvals and closes, ACE agrees or agreed to hire a minimum of sixty (60) bargaining-unit employees and to make a good faith effort to do so during the twenty-four (24) month period after the Merger closes. This paragraph in the Joint Recommendation supersedes paragraph 20 of the Merger Stipulation.

This commitment addresses the following areas:

- Bargaining Agreement Continuation
- Continuation of employment at ACE New Jersey Utility Operations

- Comparable Compensation and Benefits for Five Years
- Continuation of Work Force Diversity Commitments
- Hiring At Least 60 Bargaining-Unit Employees.

Bargaining Agreement Continuation: the agreements have continued under their existing terms and conditions.

Continuation of employment at ACE: Management has reported no merger-related involuntary departures by covered employees. Management's definition of covered employees encompasses all personnel dedicated solely to ACE activities, whether located in New Jersey or not. Virtually all who qualify under management's definition work at locations in the state. Thus, a nominal employment relationship with a non-ACE entity, such as PHISCo, is not disqualifying. However, an employee whose time is regularly split between two entities (*e.g.*, 75 percent ACE, 25 percent Delmarva) would be excluded form coverage under the employment-continuation requirement. An employee all of whose time regularly gets charged to ACE would remain covered in the event of non-recurring work that causes employee to direct-charge another entity, however. The 2017 Annual Employment Report cites 574 covered employees at the end of 574 and a 608 at the end of 2017. The prior year's report cited 547 covered employees at the end of 2016.

Management reported no merger-related ACE reductions, but did encourage and produce PHISCo reductions. Management gave all PHISCo personnel the opportunity to depart voluntarily in connection with the merger. Management classifies those who took that option as voluntary. It classifies those who chose to remain, but whose positions were eliminated as involuntary. Many PHISCo employees work in New Jersey and work substantially (but not solely) for ACE. Thus, for one who may consider management's definition of employees covered by the employment continuation requirement narrow, it is instructive to look at changes in New Jersey-based PHISCo employees. They too have increased, growing from 963 at merger closing to 1,025 by the end of December 2017. Management reported only two merger-related involuntary terminations by New Jersey-based PHISCo personnel.

Comparable Compensation and Benefits for Five Years: Management measures compliance differently for compensation and benefits. In addressing compensation, Exelon unsurprisingly failed to find complete alignment between its and PHI LLC's position descriptions and levels and corresponding compensation ranges. In moving Old PHI employees into reasonably matching Exelon positions, some of those employees were, by Exelon's structure, overcompensated. Exelon decided to forego immediate reductions for them, holding compensation at the former, Old PHI levels for two years. Thereafter it would bring compensation into line with its structure over future time period.

Benefits consist of a variety of different portions (*e.g.*, medical and life insurance, 401k participation) secured from or are supported by a variety of arrangements with third parties. Agreements with those third parties, regulatory requirements associated with changing them, and similar factors make a "flash cut" impracticable. Exelon's approach has been to move PHI LLC employees to portions of the Exelon benefits package as circumstances permit. It has not moved PHI LLC employees to a temporary "landing" pending movement to a benefits package portion matching that available to Exelon employees. Therefore, considered on a "piece-by-piece" basis, PHI employees have had either what existed prior to the merger or what Exelon has made available to its employees.

Continuation of Work Force Diversity Commitments:
Current management described the pre-merger focus on diversity as centering on affirmative action. That focus remains, but management cites an increased focus on inclusivity since the merger. That expansion emphasizes values and behaviors involving how employees treat each other and stakeholders with whom the come into contact. Interviews generally with senior executives confirmed this emphasis, as did our review of some of the on-line training programs employees must complete each year.

PHI LLC remains, as PHI did before the merger, subject to federal legal requirements enforced by the OFCCP (Office of Federal Contract Compliance Programs. The mission of the OFCCP is to "protect workers, promote diversity and enforce the law." PHI LLC comes under its requirements and guidelines by virtue of its doing business with the federal government as an electricity supplier. The OFCCP requires such "contractors" to have plans for and to take affirmative action, and not to discriminate on the basis of race, color, sex, sexual orientation, gender identity, religion, national origin, disability, or status as a protected veteran.

Diversity requirements overseen by the OFCCP include:
- Maintaining a documented affirmative action plan
- Employing internal audit and reporting systems
- Posting of notices about non-discrimination and employee rights
- Retaining employment records
- Filing annual EEO-1 reports with the Equal Employment Opportunity Commission.

Exelon has a goal of increasing diversity (measured by headcount) of 1 percent each year from 2018 through 2022, beginning from a January 1, 2018 baseline level of 51.26 percent. Management regularly measures diversity levels. The most current year-to-date report showed overall diverse employees (minorities and women combined) at: 47.96 percent of the total workforce and 55.17 percent of the exempt workforce.

Measurement of progress in reaching goals includes analysis of new external hires, promotions, turnover, and retirement, all key factors in making progress toward diversity goal achievement. The 2018 measures to date in these areas shows the following diverse employee numbers, indicating progress in hires and promotions and lower levels of diverse employee loss:
- Total New Hires: 44 of 84
- Total Promotions: 43 of 76
- Total Turnover: 98 of 194
- Total Retirement: 58 of 123.

PHI LLC regularly measures gender equity using factors including: male/female base pay ratios, promotion rates, resignation rates, female representation among job candidates, and females hired. Quarterly reports to the PHI LLC board of directors address diversity. The report for the most recent quarter of 2018 listed the percentages of new hires and promotions of diverse candidates. It also showed 100 percent compliance with the twin goals of: (a) including diverse candidates for all slated and posted positions, and (b) including at least one diverse leader on candidate interviewing panels. Through mid-year 2018, the increase of 0.52 percent in diversity of PHI LLC headcount (to 51.82 percent) put the company on track to meet its goal of an increase of 1 percent for the year. A mid-year review with senior management reviews progress and status against a series of quantified hiring, retention, advancement, and pay equity metrics.

Hiring At Least 60 Bargaining-Unit Employees: The merger closed on March 23, 2016, thus requiring completion of the hiring of the required 60 ACE bargaining unit employees by March 2018. With respect to the hiring of at least 60 bargaining-unit employees, the 2017 *Annual Economic Benefits Report* cited the retention of 26 bargaining unit hires in 2016 and 55 in 2017. This total of 81 exceeds the nominal requirement of 60. During the same period, voluntary attrition in bargaining unit positions amounted to 24 and involuntary attrition to 6 persons. The report attributed none of this voluntary or non-voluntary attrition in bargaining unit positions to the merger.

Other New Jersey bargaining hires have occurred as well. For example, ACE reported internally in late 2017 that its bargaining unit hires for New Jersey also included 43 hires (not in the 81 discussed in the preceding paragraph) at its Carney's Point, NJ customer care center. They do not qualify as ACE hires, but do represent New Jersey bargaining unit hires.

e. MFN No. 7: ACE Employment Data in Annual Economic Benefits Report

Provision No. 7 of the MFN Joint Recommendation states that:

> *ACE shall, on an annual basis for the first five (5) years after the Merger closes, include information regarding employment levels at ACE during the prior calendar year in the annual report detailing Merger-related economic benefits described in Paragraph 8 below. ACE shall detail any job losses - including whether the attrition was involuntary or voluntary- as well as any job gains, delineated using an industry-accepted categorization method such as by SAIC code. Copies of the report shall be provided to Rate Counsel when it is filed with the Board.*

ACE's first *Annual Economic Benefits Report* cited the hiring of 26 bargaining unit employees, observing that 19 fell under a semi-skilled EEOC code. This number represented 43 percent of the 60 total required in two years. Under cover of a March 31, 2017 letter, ACE filed its 2016 Annual Employment Report, which showed a net head count increase from 547 to 574, including 29 hires, and 6 location changes. ACE reported attrition of eight persons, none in merger-related classes. The report cited an increase of 28 in field resources. The report also noted a number of other data points, including:

- Recruiters attendance at 31 job fairs and work with 90 agencies and organizations
- Hiring of 13 interns at ACE and 118 PHI-wide
- 200,000 labor hours spent in training/teaching and 80,000 computer and web based sessions completed.

2. Conclusions

52. No. 22: Outplacement Services - - Management provided for outplacement services and recorded their costs as required by this Commitment.

53. No. 23: Supplier Diversity - - ACE has both increased and met its targets for diverse supplier spending.

54. MFN No. 3C: Funding for Workforce Development - - ACE has identified workforce development programs whose proposed funding amounts nominally meet the six-year total amounts required by this Commitment, with funding approval occurring in March 2018.

55. MFN No. 6: Bargaining Agreements, Attrition, Hiring - - Bargaining unit agreement and employment continuation, compensation comparability, diversity, and bargaining unit hiring have met the requirements of this Commitment.

The bargaining agreements have continued. ACE employment as management defines it has not only not fallen, but has increased. Bargaining-unit hiring has exceeded 60 on a nominal basis. Attrition has caused those hirings to produce less than a net gain of 60 people. There can be different interpretations about matters such as what constitutes a covered employee or whether 60 should be measured on a gross or net basis, and if net, net of what. However, it is clear that post-merger employment and bargaining unit hirings in New Jersey have generally fallen into line with the magnitudes framed by this commitment.

Considering each portion of the benefits package separately, PHI LLC benefits have maintained comparability either to what existed before the merger or what other Exelon employees received. Given the components of benefits packaging and the complexity of changing them, it is difficult to find a more suitable standard for comparison.

56. MFN No. 7: ACE Employment Data Reporting - - The first ACE Economic Benefits and Annual Employment reports establish an effective basis for the reporting required by this commitment.

3. Recommendations

We have no recommendations regarding Commitment Nos. 22 and 23 from the Stipulation of Settlement or Joint Recommendation (MFN) Commitment Nos. 3C, 6 and 7, which address ongoing employee or supplier diversity matters.

N. Ongoing Accounting and Rates Commitments

Commitment Nos. 10, 11, 12, 28, and 68 from the Stipulation of Settlement directly address ongoing accounting and rates matters, as does MFN No. 9.

1. Findings

a. <u>No. 10: Acquisition Premium and Transaction Costs</u>

Commitment No.10 of the Stipulation of Settlement states that:

ACE will not seek recovery in rates of: (a.) the acquisition premium or goodwill associated with the Merger; or (b.) the Transaction Costs, as defined in Paragraph 11 below, incurred in connection with the Merger by Exelon, Pepco Holdings, Inc. ("PHI"), or their subsidiaries. Any acquisition premium or goodwill shall be excluded from the ratemaking capital structure. Exelon will not record any of the impacts of purchase accounting at the PHI utility companies (ACE, Delmarva Power & Light Company ("Delmarva Power") and Potomac Electric Power Company ("Pepco")), thereby maintaining historical cost accounting at each of the PHI utility companies. Exelon has received confirmation of its decision on purchase accounting from the Securities and Exchange Commission; thus no goodwill or other fair value adjustments will be recorded at the PHI utility companies upon the closing of the Merger.

Two rate cases, both settled, have followed merger close. Settlements resolved all questions in those rate cases, including the costs addressed by this Commitment. Transaction costs largely focused on costs to get to what the industry often terms “Day One” - - referring to the first day following merger close. Therefore, a large proportion of such costs had accumulating by close of the merger. Costs to achieve savings, as expected, have continued for some time following close, with management expecting them largely to end in 2018. A roughly two-year duration for such costs is common.

The two ACE post-merger rate proceedings appear to have produced an accepted means for continued verification of the non-recovery of the costs at issue under this Commitment.

b. <u>No. 11: Definition of Transaction Costs</u>

Commitment No.11 of the Stipulation of Settlement states that:

Parties agree that for the purposes of this Agreement, Transaction Costs are defined as: (a.) consultant, investment banker, regulatory fees and legal fees associated with the Merger agreement and regulatory approvals, and (b.) purchase price, change-in-control payments, retention payments, executive severance payments and the accelerated portion of SERP payments, and (c.) costs associated with the shareholder meetings and proxy statement related to Merger approval by the PHI shareholders, and (d.) costs associated with the imposition of conditions or approval of settlement terms in other state jurisdictions. Board Staff and Rate Counsel reserve the right to see whether other costs incurred might fit within the "transaction costs" category and to advocate that such costs should not be allowed as non-recoverable transaction costs in a subsequent distribution base rate proceeding.

The preceding discussion of Commitment No.10 notes the fact that these costs have been in issue in and therefore resolved by two ACE rate filings that followed the merger.

c. <u>No. 12: Rate Filing Capital Structure</u>

Commitment No. 12 of the Stipulation of Settlement provides that:

ACE shall file, in future base rate cases, information on two alternative capital structures. One of the alternatives will be the use of a consolidated capital structure based on the capital structure that is maintained by PHI. The second alternative will be a stand-alone ACE capital structure. The parties to future base rate cases shall be free to argue for the *benefits and appropriateness of using either capital structure for ratemaking purposes or another alternative capital structure.*

As noted above, compliance with this Commitment has been tested in prior rate cases, and can adequately and efficiently occur in the future as ACE makes rate filings subject to the Commitment.

d. No. 28: ACE Books and Records

Commitment No. 28 of the Stipulation of Settlement provides that:

ACE will maintain separate books and records, and is authorized to maintain those books and records at the corporate headquarters of PHI in Washington, D.C. The Joint Petitioners agree to provide the Board and its Staff and Rate Counsel, upon request, access in New Jersey to ACE's original books and records as maintained in the ordinary course of business within twenty working days after such request. The Joint Petitioners also agree to notify the Board of any material change in the administration, management or condition of ACE's books and records within ten days after the event.

Exelon's legal department maintains custody of the governance-related books and records of ACE at offices in the District of Columbia. With respect to financial books and records, as our audit activities have confirmed, management addresses the "location" issue by observing that the ability to gain access to the covered books and records exists across a wide range of Exelon and subsidiary locations, including many at PHI and ACE. It may be impossible to identify a single location that houses possession in a traditional, "documentary" sense. However, the PHI Controller operates from Wilmington and the Exelon Controller from Chicago. Neither are located in Washington, D.C., but it is clear that access to the financial books and records can be had there, as well as in New Jersey.

The provision also requires granting of access to the books and records. PHI regulatory management has no knowledge of any denied or delayed requests for information access.

To summarize, the governance portion of books and records are physically maintained in Washington, D.C. With respect to the financial books and records, virtual location exists both there and in New Jersey.

e. No. 68: SPE Costs Not to Be Borne by ACE

Commitment No. 68 of the Stipulation of Settlement states:

None of the cost of establishing, operating or modifying the SPE will be borne by ACE or its distribution customers. The cost of obtaining the opinion of legal counsel referred to in Paragraphs 60 and 67 (or any future opinion) will not be borne by ACE or its distribution customers.

Regular SPE income statements through June 2018 show no expenses - - only income from consolidated company earnings. Management reports that no charges have come to ACE for establishing, operating, or modifying the SPE. Moreover, rates to date have resulted from settlement agreements, which resolutions appear to render moot questions about what costs underlie them. No part of the costs of the opinion referred to have not been charged to ACE.

f. MFN No. 9: Non-Recovery Costs of Conversion to Oracle

Provision 9 of the MFN Joint Recommendation provides that:

> *Exelon agrees that any costs to migrate from PHI's SolutionOne SAP system to an Oracle-based system prior to the conclusion of the life of the asset will not be recovered in ACE's distribution customer rates. The new "SolutionOne" SAP billing system platform will be in use for its expected useful life. If, for any reason, the use of the "SolutionOne" SAP billing system platform is terminated before the end of this expected useful life, ratepayers shall not be responsible for any un-depreciated costs or lease payment obligations remaining after the date upon which use is terminated.*

This provision has been relevant in rate cases already decided and it can be examined in future filings. Resolution of the prior rate cases via settlement indicates that no past cost recovery issues linger. The issue will not be relevant until the next rate filing.

2. Conclusions

57. No. 10: Acquisition Premium/Transaction Costs - - Prior rate cases have disposed of the issue of the acquisition premium and transaction costs, which have largely been incurred already; any small remaining amounts can be addressed in future rate proceedings.

58. No. 11: Definition of Transaction Costs - - Settlements resulting from two prior ACE rate filings have provided sufficient means for verification of compliance with this commitment.

59. No. 12: Rate Filing Capital Structure - - Compliance has been adequately tested in rate cases to date, and can continue to be tested in future proceedings.

60. No. 28: ACE Books and Records - - Both maintenance of and access to books and records conforms substantially to the requirements of this commitment.

61. No. 68: SPE Costs Not to Be Borne by ACE - - The SPE has not had no operating costs since formation; settlements have driven rates to ACE customers, thus mooting questions about the revenue requirements underlying them.

62. MFN No.9: Oracle Conversion Cost Recovery - - Rate cases already decided have included revenue requirements associated with the conversion, and, should further costs remain, future rate proceedings can address them.

3. Recommendations

We have no recommendations regarding Stipulation of Settlement Commitment Nos. 10, 11, 12, 28, and 68 or Joint Recommendation (MFN) Commitment No. 9, which address ongoing accounting and rates matters.

O. Ongoing Affiliates Commitments

Commitment Nos. 50, 57, 73, 74, 75, 76, 78, 80, 81, 82, 86, 87, 88, 88, and 89, directly address ongoing affiliates matters as does MFN No. 11.

1. *Findings*

a. No. 57: PHI Non-Utility Subs Transfer to Exelon

Commitment No. 57 of the Stipulation of Settlement provides that:

> *PHI subsidiaries, other than PHISCo and the PHI utilities, that are currently engaged in operations that are not regulated by a state or local utility regulatory authority will be transferred to Exelon or an Exelon affiliate; provided that PHI may retain ownership of Conectiv LLC ("Conectiv") as a holding company for ACE and Delmarva Power; and Conectiv or subsidiaries of Conectiv may retain ownership of real estate and other assets that are used in whole or in part in the business of the PHI utilities. Post-Merger, PHI will not initiate or invest in new non-utility operations without first obtaining Board approval in a written order. Following the closing of the Merger, ACE may, without further approval of the Board, become a direct subsidiary of PHI, rather than remain a direct subsidiary of Conectiv. If ACE does not become a direct subsidiary of PHI, ACE will, in its first post-merger base rate case, justify and support that it is in the public interest for it to remain as a direct subsidiary of Conectiv rather than a direct subsidiary of PHI. Notwithstanding the requirements of this Paragraph or the requirements of Paragraphs 48, 49 and 50, ACE may continue existing arrangements related to the obligations of Atlantic City Electric Transition Funding LLC.*

PHI LLC has one subsidiary (Pepco Holdings LLC), which in turn has the three principal, operating utility subsidiaries of Atlantic City Electric Company, Delmarva Power & Light Company, and Potomac Electric Power Company. Pepco Holdings LLC also owns PHISCo and 50 percent of Millennium Account Services, LLC. These five subsidiaries comprise the principal utility operating structure. Pepco Holdings LLC also has another direct subsidiary involved in utility related activity - - Atlantic City Electric Transition Funding LLC. This subsidiary has issued Transition Bonds associated with the amortization of stranded costs incurred as contract termination payments for an agreement between ACE and a non-utility generator. PHI LLC indirectly owns a last entity, POM Holdings, Inc., which operates under Potomac Electric Power Company.

b. No. 73: Compliance with Affiliate Requirements

Commitment No. 73 of the Stipulation of Settlement provides that:

> *Exelon commits to comply, and cause ACE and other Exelon affiliates to comply, with the New Jersey statutes and regulations applicable to ACE regarding affiliate transactions. Exelon also commits that the Board Staff and Rate Counsel shall have reasonable access to the accounting records of Exelon's affiliates that are the basis for charges to ACE to determine the reasonableness of allocation factors used by Exelon to assign those costs and amounts subject to allocation and direct charges.*

Chapter VII of this report address affiliate transactions and relationships and EDECA, including compliance requirements involving them. ACE secured the provision of all Exelon, old PHI, PHI LLC, PHISCo, EBSC, ACE, and SPE documents requested as part of our examination of charges to ACE. Management has reported no refusal to provide such access to Board Staff and Rate Counsel, nor have we learned of any. Chapter IV of this report addresses the results of our examination of affiliate transactions.

c. No. 74: General Services Agreement Execution

Commitment No. 74 of the Stipulation of Settlement provides that:

> *The Parties agree that PHI and its subsidiaries, including ACE, will execute the General Services Agreement ("GSA") filed with the Joint Petition as Exhibit D. Joint Petitioners agree to allocate costs to ACE in a manner that either substantially complies with the current PHI GSA, or results in a lower allocation of costs in the aggregate. The Joint Petitioners agree to demonstrate this in the first base rate case filing occurring after the closing of the Merger as compared to ACE's allocated costs pre-Merger. The Parties agree they shall work together to determine the format of an annual filing of EBSC costs charged to ACE that will be substantially in the same format as ACE's current, annual filing. The filing will be made by June 30th of each subsequent year and will include a copy of EBSC's FERC Form 60 as well as detail on the actual EBSC allocations and costs charged to ACE during the prior year. ACE shall also make an ongoing commitment to explain any change to allocation factors to ACE that are more than five percentage points versus the previous year. ACE shall also make available on request any prior months' variance reports regarding EBSC's billings to ACE.*

Compliance with this Commitment involves the following activities:

1. Execution of the GSA filed as Joint Petition Exhibit D
2. Allocation of costs to ACE in substantial compliance with the Old PHI GSA or in a manner producing lower aggregate cost allocations to ACE (demonstrated in the first ACE base rate filing subsequent to the merger
3. Cooperative efforts to determine a format for use in annual reports of EBSC costs to ACE
4. Substantial conformity between those annual reports existing annual ACE filings
5. Annual filings by June 30th of each year, accompanied by: (a) a copy of EBSC's FERC Form 60, and (b) detail on actual EBSC costs to ACE
6. Explanations of any allocation factor changes producing a greater than five percent change to ACE's allocation factors
7. Access upon request to variance reports addressing EBSC billings to ACE.

Item 1: The preceding discussion of Commitment No.3: General Services Agreement addresses compliance with the GSA execution requirement - - the first of the matters addressed by this Commitment No.74.

Item 3: ACE filed with the BPU a June 30, 2017 letter addressing the third item of this list. The letter noted that ACE had shared proposed annual report formats with BPU Staff and Rate Counsel on June 2, 2017. The letter also committed to explaining any greater than five percent changes to ACE allocation factors in subsequent June annual reports (Item 6).

Items 2, 4, and 5: The June 30, 2017 letter addressed Items 2, 4, and 5 through a series of attachments:

- EBSC Revenue by Practice Area - - Summarizing by EBSC practice area its total 2016 direct and indirect revenues and those charged to ACE
- 2016 EBSC Inter-Company Invoice to ACE - - Detailing costs billed to ACE by practice area and service ID2016 Summary of
- A listing of the allocation ratios and calculations used to determine percentages charged to ACE in 2016
- EBSC's 2016 Form 60 as filed with the FERC.

ACE addressed the second item (changes to cost allocations) in a post-merger ACE rate proceeding. Testimony from Joshua Masters stated that both Exelon and PHI used consistent philosophies, in that each used: (a) used fully- costing methods, and (b) direct charging when feasible. A management review examined the ratios (used where direct charging is deemed infeasible) for the 13 post-merger services offered by EBSCo to PHI LLC. Comparing those ratios to the ones used by PHISCo before the merger showed 3 the same and 10 different. Management's examination (summarized in an exhibit to the Masters testimony) showed higher charges to ACE for 2 of the 10 services, but net lower charges when considering all 10 together. The case produced a BPU settlement, supported by Staff and Rate Counsel, according to management. The settlement did not specifically cite Commitment No.74.

Item 7: Management also reports that it has remained ready to provide access to the variance reports and all other documentation required by these Commitments to be made available. It reports no refusals to provide such access.

d. No. 75: Affiliate Charge Controls

Commitment No. 75 of the Stipulation of Settlement provides that:

> *Controls and procedures will be designed to provide reasonable assurance that PHI's subsidiaries will not bear costs associated with the business activities of any other Exelon affiliate (other than PHI or a PHI subsidiary) other than the reasonable costs of providing materials and services to PHI (or a PHI subsidiary). PHI and its subsidiaries will maintain reasonable pricing protocols for determining transfer prices for transactions involving non-power goods and services between PHI and its subsidiaries and Exelon and any Exelon affiliate consistent with the requirements of the Board of Public Utilities and FERC.*

Chapter IV of this report addresses cost charging, assignment, and allocations. Our criteria for examining these matters incorporates the standards required by this paragraph.

e. No. 76: Maximizing Directly Charged EBSC Costs

Commitment No. 76 of the Stipulation of Settlement provides that:

> *EBSC costs shall be directly charged whenever practicable and possible. In its next base rate proceeding, ACE shall file testimony addressing EBSC charges and the bases for such charges. ACE's testimony shall also explain any changes in allocation procedures that have been adopted since its last base rate proceeding.*

We found that PHI historically made insufficient use of direct charging. That pattern has continued under Exelon, which has not made substantial efforts to address the obligation to directly charge as required by this Commitment. Chapter IV of this report addresses cost charging, assignment, and allocations in detail.

f. No. 78: Notice of EBSC Regulatory Audits

Commitment No. 78 of the Stipulation of Settlement provides that:

> *ACE shall promptly notify the Board, Board Staff and Rate Counsel when it has received notice that the SEC, the FERC, or the state regulatory commission in any state in which an affiliate utility company operates has initiated an audit of EBSC. ACE shall provide copies of the portions of all audits highlighting the findings and recommendations and ordered changes to the GSA pertaining directly or indirectly to EBSC's determinations of direct billings and cost allocations to its affiliate utility companies, as well as any sections addressing ACE. If after review of such material, Board Staff or Rate Counsel reasonably determines that review of the remainder of such audit report is warranted, ACE shall make the complete report available for review in ACE's New Jersey office or at the Board, subject to appropriate conditions to protect confidential or proprietary information.*

There have been no audits of EBSC by the SEC, the FERC, or state commissions since 2015. The FERC's Enforcement Office's Division of Audits and Accounting notified Exelon by a January 18, 2018 letter of an audit of Exelon Corporation and its utility subsidiaries.
The letter describes the scope of that audit as follows:

> *The audit will evaluate whether the Companies are in compliance with the conditions established in the Commission's November 20, 2014, order authorizing the merger of Exelon and Pepco Holdings, Inc. The audit will also evaluate the Companies' compliance with; (1) the tariff requirements governing its FERC jurisdictional rates; (2) accounting regulations in 18 C.F.R. Part 101; and (3) financial reporting regulations in 18 C.F.R. Part 141, focusing primarily on the transactions and costs associated with the merger transaction. The audit will cover the period January 1, 2013 to the present.*

ACE notified the BPU and Rate Counsel of the audit's initiation by letter of February 15, 2018.

g. No. 80: Costs of EBSC Assets for ACE Use

Commitment No. 80 of the Stipulation of Settlement provides that:

> *For assets that EBSC acquires for use by ACE, the same capitalization/expense policies shall apply to those assets that are applicable under the Board's standards for assets acquired directly by ACE.*

EBSCo has made only comparatively small acquisitions of capital assets for use by and billed to ACE directly since the merger, amounting to two IT hardware acquisitions in 2017, having a combined value of $536,730. Management reports that it has recorded them as capital assets in a manner consistent with ACE capitalization/expense policies.

h. No. 81: Depreciating EBSC Assets for ACE Use

Commitment No. 81 of the Stipulation of Settlement provides that:

> *For depreciable assets that EBSC acquires for use by ACE, the depreciation expense charged to ACE by EBSC shall reflect the same depreciable lives and methods required by*

the Board for similar assets acquired directly by ACE. In no event shall depreciable lives on plant acquired for ACE by EBSC be shorter than those approved by the Board for similar property acquired directly by ACE.

Management has recorded the approximately $536,730 (see the discussion under Commitment No. 80) in assets so far acquired and subject to this Commitment as capital assets in a manner consistent with BPU-approved depreciation rates:

- Depreciation Method: Annual Life Rate - - 4.10 percent
- Depreciation Group: 1500:INFR:A39131:NJ.

i. No. 82: Return on EBSC Assets for ACE Use

Commitment No. 82 of the Stipulation of Settlement provides that:

For assets that EBSC acquires for use by ACE, the rate of return shall be based on ACE's authorized rate of return, unless EBSC is able to finance the asset at a lower cost than ACE. In such cases, the lower cost financing will be reflected in EBSC's billings to ACE, and the resulting benefit will be passed on to ratepayers.

EBSC has not used alternative (*e.g.,* third-party) financing for the $536,730 in assets (see the preceding discussion under Commitment No. 80) to which this Commitment so far applies. EBSCo directly billed ACE for the costs of these assets and ACE has recorded them on its books. Therefore, they will presumably receive future return treatment on the same basis as ACE assets generally.

j. No. 86: ACE Right to Opt Out of EBSC Services

Commitment No. 86 of the Stipulation of Settlement provides that:

With the exception of Corporate Governance Services, ACE shall have the right to opt out of any EBSC service that it determines can be procured in a more economical manner, is not of a desired quality level, or for any other valid reason, including Board Orders, after having failed to first resolve the issue with EBSC.

The *Associate Transaction Procedures Manual* sets forth procedures for completing Service Level Arrangements, which define and set the terms for services performed by EBSC for affiliates, including ACE. These "SLAs" generally set forth the scope of EBSC service to be provided, for periods ranging from one to three years. The SLAs also define service-level and unit-cost expectations, performance measures, and billing processes. The result from interaction between management at each EBSC service provider and each entity served. Senior management at the entity served must agree to the SLAs. EBSC makes available an Exelon BSC Service Catalog describing its already-defined service offerings, and works with client entities to develop others to meet particular needs. The Associate Transaction Procedures Manual requires EBSC to:

…review its costs for competitiveness on a regular basis. Benchmarking and other measurement techniques will be used to the extent deemed appropriate by senior management. Additionally, BSC will also initiate a customer review process to gauge the value and quality of the services provided. Results will be shared with the Client Companies to allow them to evaluate cost effectiveness and assess alternate options.

The General Services Agreement (discussed above under Commitment No. 3: General Services Agreement) provides that EBSC will perform only client-company services, except for "Corporate Governance Services." The General Services Agreement defines these latter as "those activities and services reasonably determined to be necessary for the lawful and effective management of Exelon System businesses." The agreement then goes to provide a list of what may be considered Corporate Governance Services, including items such as accounting, finance, executive, strategic planning, legal, human resources/benefits, audit, corporate communications, public affairs, environmental, health and safety, government affairs, project evaluation, treasury, diversity; employee and labor relations, compensation and benefits, employment, regulatory, contract, litigation and intellectual property, management services for federal compliance, and relationship management with the U.S. Congress and Federal agencies support. Moreover, this list is expressly made non-exclusive.

The listed areas do fall among those often provided centrally, but they go well beyond what the industry would normally include within the scope of "corporate governance." Three factors combine to give what is essentially an ability to constrain opt out powers almost totally:

- The wide discretion to declare any activity or service necessary for "effective management of Exelon System businesses as corporate governance
- The broad list of included activities
- The ability to declare even more within the scope of "Corporate Governance."

PHI and ACE have not chosen to opt out of any available EBSC services. Our discussions with management about affiliate matters and merger commitment compliance gave no reason to believe that Exelon or PHI operate under the belief that PHI or ACE lack the power to opt out of services provided by EBSC.

k. <u>No. 87: EBSC Costs/Allocations Reviews</u>

Commitment No. 87 of the Stipulation of Settlement provides that:

> *ACE agrees that the Board under its authority pursuant to the Electric Discount and Energy Competition Act may review the allocation of costs in sufficient detail to analyze their reasonableness, the type and scope of services that EBSC provides to ACE and the basis for inclusion of new participants in EBSC's allocation formula. ACE and EBSC shall record costs and cost allocation procedures in sufficient detail to allow the Board to analyze, evaluate, and render a determination as to their reasonableness for ratemaking purposes.*

Chapter IV reports the results of our examination of allocations. Chapter VII reports the results of our examination of EDECA compliance. Chapter II describes our review of ACE financial performance. These chapters required extensive data, which we found management generally willing and able to provide. Those chapters address the quality of the cost data and allocation procedures.

l. <u>No. 88: Access to Affiliate Books and Records</u>

Commitment No. 88 of the Stipulation of Settlement provides that:

Board Staff and Rate Counsel shall be assured reasonable and convenient access to the books and records of EBSC and other Exelon companies that transact business with ACE, and supporting documentation thereof, but only to the extent relevant to transactions with ACE but excluding competitive processes or transactions supervised by an administrative or other governmental body of competent jurisdiction (such as ACE's procurement of Basic Generation Service under the supervision of the Board of Public Utilities).

We were able to secure from management sufficient access to books and records for the performance of this audit, which addressed transactions among affiliates. We have also recently completed and audit of the New Jersey BGS process as carried out by and for all of the state's EDCs. Neither this nor that other audit disclosed any material concerns about access to the information needed to address transactions with or involving ACE. Management reports that it has not in any case denied Board Staff or Rate Counsel access to covered books and records.

We ultimately received the Exelon-level information we requested, but it came in a number of cases after repeated efforts to secure it. The information subject to these unduly cumbersome acquisition efforts included planning documents, material in setting budgets for PHI LLC- and ACE-level organizations, and operations costs incurred by EBSC departments, some of which costs were allocated to PHI and ACE. The barriers to acquisition included excessive time in responding and questioning of relevance.

m. No. 89: Abiding by Affiliate, BGS Regulations

Commitment No. 89 of the Stipulation of Settlement provides that:

Joint Petitioners agree to abide by New Jersey regulations regarding Affiliate Relations, NJA.C. 14:4-3.1 et seq., and the New Jersey regulations and Board of Public Utilities Orders regarding provision of Basic Generation Service.

To the extent that this audit and our recently completed audit of the New Jersey BGS process addressed such regulations, we found no violations.

2. Conclusions

63. No. 57: PHI Non-Utility Subs Transfer to Exelon - - The transfer of the former non-regulated PHI subsidiaries to Exelon has occurred, no entities in the PHI LLC structure have acquired non-utility operations, and the corporate structure surrounding PHI LLC conforms to the requirements of this Commitment.

64. No. 73: Compliance with Affiliate Requirements - - See Chapters IV and VII of this report for conclusions about compliance generally with affiliate requirements and specifically with EDECA requirements.

65. No. 74: General Services Agreement Execution - - Management has complied with the administrative requirements of this Commitment.

Chapter IV of this report examines how allocations get made (the subject of this Commitment's Item 2, which imposes substantive requirements). That chapter addresses fully our findings, conclusions, and recommendations with respect to allocations.

66. **No. 75: Affiliate Charge Controls - - See Chapter IV of this report for conclusions affiliate charge controls.**

67. **No. 76: Maximizing Directly Charged EBSC Costs - - Chapter IV of this report describes a pattern of substantial underuse of direct charging under old PHI and its continuation under Exelon and PHI LLC, which have not brought direct charging to levels that would support fulfillment of the requirements of this Commitment.** *(See Recommendation #12 immediately below)*

68. **No. 78: Notice of EBSC Regulatory Audits - - Management provided notice of the one audit potentially covered by the requirements of this Commitment.**

69. **No. 80: Costs of EBSC Assets for ACE Use - - Such acquisitions have been small, and appear to conform to the requirements of this Commitment.**

70. **No. 81: Depreciating EBSC Assets for ACE Use - - ACE has recorded the assets so far covered by this Commitment to classes with defined depreciation rates that appear to conform to established requirements.**

71. **No. 82: Return on EBSC Assets for ACE Use - - EBSCo directly billed ACE for the costs of the assets so far covered by this Commitment, and recording of them on ACE's books will presumably produce in future rate proceedings a return treatment similar to that accorded generally to similar assets.**

72. **No. 86: ACE Right to Opt Out of EBSC Services - - PHI LLC and ACE may technically opt out of non-corporate governance services, but absent a clear definition of and a substantial scope for non-corporate governance services makes what Exelon will allow unclear and possibly so narrow as to be insubstantial.** *(See Recommendation #13 immediately below)*

73. **No. 87: EBSC Costs/Allocations Reviews - - See Chapters IV and VII of this report for conclusions about the cost data and allocation procedure requirements of this Commitment.**

74. **No. 88: Access to Affiliate Books and Records - - We succeeded in gaining access to information needed to conduct our audit, but found information from the Exelon level proved unusually cumbersome to obtain.** *(See Recommendation #14 immediately below)*

75. **No. 89: Abiding by Affiliate, BGS Regulations - - Our work has disclosed no violations.**

3. Recommendations

12. **See the Recommendations section of Chapter IV.** *(See Conclusion #67 immediately above)*

13. **Enable the power to opt out of EBSC services by providing a clear and appropriately scoped list of permitted opt-out areas.** *(See Conclusion #72 immediately above)*

The list should clearly describe permitted opt-out areas and it should provide clear methods for PHI LLC and ACE to identify, analyze, and propose opt-outs. PHI LLC should explicitly consider opt-out alternatives as part of its interaction and negotiation with EBSC on centrally provided service options. PHI LLC's documentation of its business planning activities should reflect when and what consideration it has given and what analysis it has undertaken with respect to opting out. We do not expect broad opting out, but do consider evaluating it as a necessary element of business planning. We also do not expect opt-out analysis every year of every service, but PHI LLC, if looking regularly at major EBSC costs sources, should be able to identify at least occasional opportunities worthy of examination. So far, it appears not to have identified any.

14. **Establish an approach and means at the Exelon level to expedite the delivery of information: (a) directly subject to Commitment No. 88, and (b) relevant to meeting the broader needs of BPU-commissioned activities, such as this audit.** *(See Conclusion #74 immediately above)*

We have in other cases found "remoteness" between a holding company and its operating utilities - - generally the more so when those utilities comprise small portions of total operations. PHI LLC-level regulatory management appears to need to make more clear to EBSC and holding company level personnel the nature and extent of activities, quantitative data, and qualitative information relevant to the types of inquiries likely to come from BPU-related activities. We find strength in Exelon's location of regulatory management close to the jurisdictions involved. However, the time and effort it took us to get information, some of it basic, indicates a gap at the Exelon end in providing a place for PHI to go to get needed information expeditiously and completely.

P. Ongoing Reporting Commitments

Commitment Nos. 64 and 65 directly address ongoing reporting requirements, as do MFN Nos. 8, 10, 13, and 15.

1. Findings

a. No. 64: Reports on Ring Fencing and Other Requirements

Commitment No. 64 of the Stipulation of Settlement provides that:

> *ACE will file with the Board of Public Utilities an annual compliance report with respect to the ring-fencing and other requirements.*

Provision 13 of the MFN Joint Settlement amends and supersedes this commitment. Provision No.13 provides that:

> *Exelon shall conduct an analysis of its operational and financial risk to determine the adequacy of existing ring-fencing measures. Exelon will include this analysis on a one-time basis in the report filed with the Board pursuant to Paragraph 15 herein, with copies provided to Rate Counsel at the time the report is filed with the Board. This paragraph revises and supersedes paragraph 64 of the Stipulation of Settlement.*

We described above the report Exelon filed to meet the one-time requirement of MFN Commitment No. 13. The question that remains is whether any other aspects of Commitment No. 64 survive "superseding" MFN Commitment No. 13. Management provided an Atlantic City

Electric Company Ring Fencing Report dated June 30, 2017. It provides a short summary of how Exelon has complied with the ring-fencing requirements of the Stipulation of Settlement. It does not address compliance with "other requirements." Management reported that Commitment No.13 of the MFN serves to: (a) make the filing requirement one-time and not annual, and (b) eliminate the need for addressing Commitments other than ring-fencing.

This report does address how Exelon acted to meet ring-fencing Commitments. There is clearly substantial merit in annual reporting on compliance with merger commitments, very many of which are ongoing, and require continued actions (or non-actions) by Exelon, PHI LLC, and other entities. Moreover, MFN Commitment No.13, apart from how one interprets its reference to Commitment No. 64, has a much narrower scope. Commitment No. 64 does not even require a risk-based analysis - - only an annual compliance report. MFN Commitment No.13 does not require any form of compliance reporting, but only a one-time risk analysis. Management relies on the statement that Commitment No.13 "…revises and supersedes paragraph 64 of the Stipulation of Settlement" to conclude that it entirely supersedes all of Commitment No. 64.

We do not present a legal interpretation about the interplay of Commitment No. 64 and MFN Commitment No.13. However, we offer two observations:

- The current "snapshot" of financial and operating conditions presented at most a one-time risk analysis of conditions, offering no sustaining value in addressing commitments expected to remain into the future under as yet unknown and potentially variable future conditions.
- As this chapter of the report indicates, the ongoing commitments and the conditions under which they are likely to "count" are complex and dynamic, making periodic (e.g., annual) compliance reporting very important, regardless of whether the combination of the two commitments compel it.

b. <u>No. 65: Annual Exelon Officer Certification</u>

Commitment No. 65 of the Stipulation of Settlement provides that:

> *At the time the SPE is formed and every year thereafter, ACE shall provide the Board of Public Utilities with a certificate from an officer of Exelon certifying: (a.) Exelon shall maintain the requisite legal separateness in the corporate reorganization structure; (b.) the organization structure serves important business purposes for Exelon; and (c.) Exelon acknowledges that subsequent creditors of PHI and ACE may rely upon the separateness of PHI and ACE and would be significantly harmed in the event separateness is not maintained and a substantive consolidation of PHI or ACE with Exelon were to occur.*

ACE has provided two annual certifications, each from the Exelon Senior Vice President, Deputy General Counsel, and Corporate Secretary. The first came under cover of a Mach 28, 2016 letter, and the second by letter of March 23, 2017. The language of each did not conform exactly to the language of Commitment No. 65, adding to the part (a) certification the language "consistent with the requirements of the Order." This addition begs the question of whether the intent of the Commitment's use of the term "requisite" meant: (1) sufficient to avoid consolidation, or (2) merely sufficient to meet the explicit requirements of the Stipulation of Settlement Commitments regarding separateness, whether or not they eventually might prove to produce separateness.

Certainly, the first alternative embodies the intent of the separateness Commitments. Moreover, the language of Commitment No. 65 does not directly call for compliance with order language, instead using a term ("separateness") more consistent with the purpose of the Commitment. Should the matter become relevant, the courts eventually will determine separateness. They will do so under tests that are not strictly objective or reducible to a defined "checklist." What that means is that "separateness" is not at present a precisely definable concept, and, moreover, appears one subject to evolution as case law progresses.

Thus, securing the full intent of the order, not to mention precise compliance with the wording of Commitment No. 65, supports a preference for eliminating the language that Exelon has added to the terms of the Commitment.

A second issue with the two Exelon certifications arises from their statement that Exelon "will comply" (meaning in the future) versus has complied (over the past year). This phrasing means that Exelon is not certifying to compliance, but merely stating an intent to comply in the future. Such a statement appears to have little value, inasmuch as Exelon has a duty to comply regardless of the certification. What appears to be more meaningful is to secure the word of an officer that Exelon has complied.

The Commitment does use the word "will comply," and Exelon has employed conforming language. If it appeared that some useful purpose is being served by annual commitments to do what is already obliged, that might make sense. However, there is no evident purpose in doing so. Notably, compliance was, at the time of the creation of the Stipulation a matter of future action, offering as a plausible interpretation of the Commitment the recognition that the certifications would come in the future, not that the certifications would make representations about the future. Second, the use of such certifications in other instances generally do address historical compliance, seeking to make an officer responsible and therefore diligent in stating that a requirement has been effectively met. Third, an interpretation that the certification is to be historical (what has been done) rather than future (what is intended to be done) is supported by the above-discussed concept that a certification by an officer that Exelon will do what Exelon must do in the absence of the certification is an essentially hollow gesture.

A third matter of interest concerning the certification is the audience to whom it is addressed. Submission to the BPU certainly helps (if it is agreed that the certification is to past compliance and not future intent to comply) in verifying compliance with a regulatory obligation. However, the issue of separateness largely concerns how an entity has held itself out to the public, and creditors in particular. That purpose would be better served by requiring Exelon to include the certification in documents having more visibility to the community that needs to be kept on notice about the separateness of ACE and PHI.

c. MFN No. 8: Merger Economic Benefits Reports

Provision 8 of the MFN Joint Recommendation provides that:

> *For each of the first five (5) years after the Merger closes, ACE will submit an annual report to Board Staff and Rate Counsel detailing the economic benefits of the Merger for the State of New Jersey. The report will detail the methodology used to calculate the benefits and the specific description of the benefits.*

ACE filed its first economic benefits report (for 2016) under cover of March 31, 2017 letter from counsel. The nine- page report cited the 2016 distribution to customers of $79.6 million of the $133.4 million total required as direct financial contributions under the merger commitments. The report also cited unquantified economic benefits from improved reliability and lower (also unquantified) cost reductions resulting from merger synergies. The report also cited a one-time reduction of $16.7 million in Non-Utility Generation (NGC) and Uncollectible portion of Societal Benefits Charge, saving customers a $2.06 /month increase from June 16, 2016 through May 31, 2017.

Management retained the Analysis Group to use the IMPLAN model to assess benefits, committing to the use of the industry-accepted IMPLAN model to assess economic value in future annual reports. The report addressing 2017, filed on March 30, 2018, did report results based on that model, an industry accepted one, whose operation the report explained.

d. <u>MFN No. 10: Safety Reporting</u>

Provision 10 of the MFN Joint Recommendation provides that:

> *Exelon is committed to having all of its utilities achieve and maintain first quartile performance in safety. Consistent therewith, ACE will include information on its safety performance and safety initiatives in the annual report filed with the Board pursuant to Paragraph 15 herein, with copies of the report provided to Rate Counsel at the time it is filed with the Board. ACE's reporting will include a report by Exelon on its existing safety and cybersecurity policies.*

ACE made its first BPU filings of safety and cyber reports on June 30, 2017. The reports address the subjects required by this Commitment.

e. <u>MFN No. 15: Exelon Utilities Metrics Reports</u>

Provision 15 of the MFN Joint Recommendation provides that:

> *Exelon and PHI shall file with the Board, with copies to Rate Counsel, annual across-the-fence reports comparing the performance and status of the utilities within the Exelon family. The reports shall address substantive areas as directed by the Board and may include subject areas such as reliability, customer service, safety, rate and regulatory matters, interconnections, energy-efficiency and demand-response programs, and deployment of new technologies, including smart meters and smart grid, automated technologies, microgrids and utility-of-the-future initiatives. The annual reports shall only be filed under separate cover in the event that the across-the-fence comparison is not duplicative of analysis provided in a separate report required by the Board.*

ACE made a filing for 2016 with the BPU on June 30, 2017. ACE’s filing for 2017 came on June 29, 2018. The reports contain the information in the categories listed in this Commitment, but filings could be advanced from the end of the second quarter of the following year.

2. Conclusions

76. No. 64: Reports on Ring Fencing and Other Requirements - - A substantial argument can be made that MFN Commitment No. 13 eliminated all aspects of the Commitment to provide annual reporting on ring fencing and other requirements, but substantial reason exists to required continuation of such reporting on a cyclical basis. *(See Recommendation #15 immediately below)*

We therefore consider it useful for the BPU to determine whether annual compliance reporting survives under Commitment No. 64 and, if it does not, to impose such reporting in any event.

77. No. 65: Annual Exelon Officer Certification - - Exelon: (a) has added to the required certification language that should be removed, and (b) should provide certification that it has maintained (as opposed to will maintain) separateness. *(See Recommendation #16 immediately below)*

Exelon officer certifications have added the phrase "consistent with the requirements of the Order." The point of the certification being a declaration sufficient to avoid consolidation, the language added should be removed from future certifications. The future-oriented term "will" comports with the language of the commitment, but its reduces the certification to a statement of an intent as to the future. Finally, as separateness largely concerns how an entity has held itself out it would better serve for Exelon to include the certification in documents having more visibility to the community that needs to be kept on notice about the separateness of ACE and PHI.

78. MFN No. 8: Merger Economic Benefits Reports - - ACE has filed reports for 2016 and for 2017. They provide the analysis and explanations required by this Commitment.

79. MFN No. 10: Safety Reporting - - ACE has provided the safety and cyber reports required by this Commitment.

80. MFN No. 15: Exelon Utilities Metrics Reports - - ACE has made filings addressing the required information categories.

3. Recommendations

15. Provide for cyclical reporting of compliance with ring fencing and other requirements. *(See Conclusion #76 immediately above)*

There is merit, considering the burdens on management and on the resources of the BPU and stakeholders, to set up a two- or three-year cycle for reporting on all commitments, staggering them to reduce yearly burdens and to reflect the lesser "immediacy" some of those commitments likely exhibit.

16. Remove "consistent with the requirements of the Order" from the required Exelon officer certifications and add to the certification a statement that Exelon "has maintained" separation. *(See Conclusion #77 immediately above)*

Q. Power Markets

MFN Commitment Nos. 90A, 90B, 90C, 90D, and 90E directly address power markets. Another set of Commitments arose pursuant to an agreement with The Alliance for Solar Choice (TASC).

1. Findings

a. 90A: Competition Protections (Electric Generation Interconnection Studies)

Commitment No. 90A of the Stipulation of Settlement provides with respect to Electric Generation Interconnection Studies that:

> *Exelon commits that its Affiliated Transmission Companies will each identify, with PJM's concurrence, at least three independent third-party engineering consulting firms that are qualified to conduct Facilities Studies under the PJM generator interconnection process. Exelon shall provide notice and a list of such firms to the Parties to this Settlement thirty days prior to submission to PJM. The Parties shall have the right to provide comments to Exelon or PJM for their review with respect to such submission. The parties or any generation interconnection applicant may propose other independent third-party engineering consulting firms to Exelon for its consideration with respect to adding them to this list of qualified firms. Exelon shall make a decision with respect to whether any proposed independent third-party engineering consulting firm can be included on such list within thirty days of a request to include any such proposed firm. Once approved, Exelon shall not be permitted to remove a third-party engineering consulting firm from such list unless and until it can demonstrate good cause as determined by the PJM Market Monitor or the FERC.*
>
> *Any generation developer that desires to interconnect to the transmission system of one of Exelon's Affiliated Transmission Companies may, in the developer's discretion and at the developer's expense, direct PJM to utilize one of the identified firms to conduct the Facilities Study for its generation project for upgrades and interconnection facilities required on the Affiliated Transmission Company's facilities.*
>
> *For all interconnection studies performed by a listed independent third-party engineering consulting firm, the Exelon Affiliated Transmission Company will cooperate with and, as requested, provide information to PJM and the independent engineering consulting firm as needed to complete all work within the normal scope and timing of the PJM interconnection process. The Affiliated Transmission Company will provide to PJM the cost estimate for any facilities for which it has construction responsibility assigned in the PJM Interconnection Services Agreement. If a dispute arises in connection with the Study performed by the independent engineering consulting firm or the Affiliated Transmission Company, then the generation developer or the Affiliated Transmission Company may pursue resolution of the dispute through the process laid out in the PJM Tariff. Affiliates of Exelon that are pursuing the development of generation within the service territories of one of the Affiliated Transmission Companies shall, at their own expense, direct PJM to utilize one of the independent engineering consulting firms to conduct the Facilities Study for upgrades and interconnection facilities required on the Affiliated Transmission Company's facilities and the Feasibility Study and System Impact Study shall be performed by PJM. Nothing in this Paragraph 90A precludes an applicant, as part of its project team,*

from contracting with other contractors to assist it in the PJM interconnection process at its sole discretion.

This Commitment addresses the following areas:

- List of third-party engineering consulting firms
- Use of the listed firms
- Cooperation with studies.

ACE provided in a September 1, 2016 letter to the BPU a list of three third-party engineering consulting firms to meet this commitment. The three companies nominated were accepted by PJM as acceptable, and each of the three companies is currently still on this list. Management has designated responsibility for development and maintenance of this list.

Management reports that it has not become aware of any developer requests for studies. Therefore, no occasion for it to perform its obligations with respect to consulting-firm engagements has yet arisen. Management has assigned responsibility for ensuring ACE's engagement, should requests come in the future.

b. 90.B: Competition Protections (Commitment to Stay in PJM)

Commitment No. 90B of the Stipulation of Settlement provides with respect to remaining in PJM that:

> *Exelon commits that ACE, Delmarva Power, Pepco, PECO and BGE will remain as members of PJM until January 1, 2025; provided, however, that if there are significant changes to the structure of the industry or to PJM, including markets administered by PJM, during that period that have material impacts on ACE, Delmarva Power, Pepco, PECO or BGE, then any of those companies may file with FERC to withdraw from PJM. The Parties to this Settlement may participate in the proceeding in which FERC will review the withdrawal request and may contest before FERC the companies' assertion that there are significant changes to the structure of the industry or to PJM that have material impacts on ACE, Delmarva Power, Pepco, PECO or BGE.*

There has been no change in PJM membership since the merger.

c. No. 90C: Separate Advocacy Organizations for Exelon Generation and Constellation

Commitment No. 90C of the Stipulation of Settlement provides that:

> *Exelon shall utilize separate legal and government-affairs personnel, support personnel, and separate law firms and consultants to advocate before the Board of Public Utilities on behalf of Exelon Generation and Constellation, on the one hand, and Affiliated Transmission Companies on the other.*

A nine-person group within Exelon Generation, under a Vice President, State Government Affairs, represents this affiliate and its subsidiaries before the BPU. The same group that performs the work for Exelon Generation does so for Constellation.

Regulatory Policy and Strategy, a separate organization within PHI LLC, (see Chapter IX of this report) does the same for all PHI LLC utilities, including ACE. This PHISCo organization has responsibility only for utility matters. A PHI LLC-level legal organization (see XXI of this report) provides legal support and representation only for PHI LLC entities.

Exelon's *Legal Services Procedure, Retention of Outside Counsel* requires that Exelon Generation and Constellation use in matters before the New Jersey BPU law firms and consultants separate from those used on behalf of Exelon Generation and Constellation. Approval at a senior Exelon legal organization level of compliance and selection of law firms from a "Preferred Provider List" provide for control over compliance with this requirement. As Chapter XXI of this report describes, PHI LLC manages at its level a legal organization whose resources operate under executives separate from the legal groups who serve in the relevant roles for Exelon Generation and Constellation. The first common source of management of those legal groups and the legal organization serving PHI LLC comes at the Exelon General Counsel level.

d. No. 90D: Compliance with ACE-PEPCO Merger Order Stipulation

Commitment No. 90D of the Stipulation of Settlement provides that:

Exelon commits to comply with the competition-related provisions (paragraphs 1-14 set out below, modified to reflect this Merger) of the stipulation embodied in the Commission's June 2002 Order approving the merger of ACE and Pepco (219 P.U.R. 4th 235).

1. *Atlantic City Electric Company ("Atlantic") shall transact business with Exelon's generation and marketing affiliates in the same manner as Atlantic transacts business with unaffiliated competitive generators and marketers, shall provide no preferences to such affiliates and shall provide no competitive information to such affiliates that is not provided on the same basis and contemporaneously to such unaffiliated entities. Notwithstanding the above, it is understood and agreed that Exelon's service corporation, generation and trading affiliates will provide Atlantic with research and analyses concerning energy markets and pricing, energy risk management support and related services which research and analyses shall not promote Exelon's generation business or trading operations. In procuring power for Atlantic's New Jersey Basic Generation Service ("BGS"), (i) Atlantic and Exelon shall only use designated individuals who are not purchasing or selling power, natural gas or financial instruments for their competitive affiliates, and who are employees of an organization which is separate from Exelon generation or trading affiliates, which may be Atlantic, in which employees or their managers receive no compensation as the result of sales of power achieved by Exelon generation or trading affiliates, except incentives provided through overall corporate goals and not directly through sale of power except as they affect earnings per share or similar measures; (ii) that employees who purchase power for Atlantic BGS shall operate in an area that is physically distinct from the wholesale trading function (i.e., separated by floor, wing or other building); and (iii) such purchases will be made specifically on behalf of Atlantic which will have its own identified supply portfolio. Additionally, Atlantic's utility load forecasting shall be performed by employees of the utility or the service company independent and separate from the trading function. Finally, Atlantic shall not, directly or*

indirectly, convey any preference regarding the purchase of energy for Atlantic's New Jersey BGS to its competitive affiliates through the merged entity's service corporation, or through Pepco or Exelon.

2. *Exelon shall operate its generation, marketing and trading functions distinct from Atlantic's transmission and distribution business as separate corporate entities with separate cost accounting, separate operating staffs below senior officer level, and locations for operating personnel that are physically separated by address, floor, wing of building, with appropriate protections in the computer system to give effect to this separation. However, individuals performing general corporate functions through Exelon's service company such as legal, regulatory, accounting, treasury, insurance, tax, and other administrative functions (including, but not limited to, human resources, building maintenance, vehicle and janitorial services) may provide such services to Atlantic and to entities performing generation, marketing and trading functions, so long as such individuals properly assign their time and costs to the proper entity and otherwise comply with requirements for non-disclosure of information.*

3. *Any transfer by Atlantic of competitive information from Atlantic to any generation, marketing or trading affiliate of Exelon shall be contemporaneously made available to non-affiliated generators/suppliers, including competitive information regarding viable locations for development of generation projects, the status of internal policies on transmission and distribution issues, data and analysis of customer growth and new customers, customer transfers to other electric power suppliers, natural gas intra and inter-state pipeline issues and natural gas supply issues. Such dissemination shall be made via a public posting on a nondiscriminatory basis.*

4. *Atlantic shall provide no preference to Exelon generation functions in the evaluation of and contracting for transmission interconnection construction and services or any other utility service.*

5. *Atlantic shall provide no competitive information to generation affiliates of Exelon related to operations, output or expansion of any non-utility generation. Exelon shall assure that its energy trading groups do not receive competitively sensitive information from Atlantic regarding non-utility generators through the measures identified in numbered paragraph one above.*

6. *Atlantic shall implement standards and procedures consistent with the terms of this Stipulation and also consistent with Board policies, standards and regulations, to prevent preferences and improper flow of information between Atlantic and Exelon, including Exelon's service corporations and its generation or marketing affiliates. These principles and procedures shall also be embedded in employee operating procedures and other appropriate documents, copies of which shall be provided to the Board within six months of the merger closing. Periodic compliance training of employees shall be conducted so that employees are fully informed of the*

commitments herein and the associated restrictions on their activities as employees.

7. *Atlantic shall procure its net power supply requirements for its New Jersey BGS customers in a manner that provides no preference to Exelon or other affiliated sources of generation, to any generation addition (expansions or new generation) which Exelon affiliates may be planning, to Exelon's trading group, or its retail marketing group(s).*

8. *Atlantic shall provide concurrent notice to Signatory Parties to this proceeding of the filing with the Federal Energy Regulatory Commission of any power purchase agreements (or agreement renewals) between Exelon generation or trading affiliates and Atlantic for New Jersey power sales of longer than 90 days. The Signatory Parties reserve the right to argue that said purchases are subject to Board review.*

9. *The provisions of this Stipulation shall apply to any successor companies to Exelon or affiliates of Exelon in the same or similar business activities involving Atlantic.*

10. *The provisions of this Stipulation related to preventing subsidy, improper transfer of information or preference to Exelon's competitive affiliates by Atlantic shall also apply so as to prevent Exelon's service corporation, or any other affiliate acting on behalf of Atlantic, from acting as the intermediary for any such subsidy, improper transfer of information or preference.*

11. *Atlantic, Exelon and its generation and trading affiliates are not precluded from taking any steps necessary in a time of Emergency. Emergency means (i) an abnormal system condition requiring manual or automatic action to maintain system frequency, or to prevent loss of firm load, equipment damage, or tripping of system elements that could adversely affect the reliability of an electric system or the safety of persons or property; or (ii) a fuel shortage requiring departure from normal operating procedures in order to minimize the use of such scarce fuel; or (iii) a condition that requires implementation of emergency procedures as defined in the PJM Manuals. Any such emergency situation shall be reported pursuant to the Atlantic City Electric FERC-approved standards of conduct, pursuant to 18 C.F.R. §37.4.*

12. *Disputes concerning alleged violations of these provisions shall be submitted for resolution to the Board, which has jurisdiction over the terms of the Stipulation and which shall have authority to take such action as it deems appropriate, consistent with applicable law.*

13. *Atlantic shall not petition for any alteration of these provisions for four years from the date of the BPU's issuance of a final Order in this proceeding. After the four year period, Atlantic shall provide Signatory Parties of this Stipulation with 90-days advance notice of its intent to file a petition with the BPU seeking such changes and engage in good faith discussions related to the proposed changes with*

any Signatory Party so requesting. Atlantic shall have the burden of proof to demonstrate that a change or changes in law, regulations or circumstances has occurred such that continued enforcement of these provisions is unduly burdensome or unreasonable, and that amendment or termination of these provisions will not harm the development of a competitive energy market. Unless altered by the Board in an interim order, the provisions set forth in paragraphs 1-13 shall remain in effect during the pendency of any Board proceeding seeking alteration of these conditions.

14. *Atlantic shall honor existing contracts with non-affiliated, non- utility generators including future modifications that may be approved by the New Jersey Board of Public Utilities.*

This Commitment imposes obligations addressing:

- Separation and Arm's-length dealing with generation and marketing affiliates
- Non-disclosure of competitive information
- No preference to Exelon Generation in transmission interconnection, other services
- Filing of standards and procedures with BPU and compliance training
- No preference to affiliates in BGS purchases
- Notice of supply agreements with affiliates
- Honoring existing non-utility generation contracts.

The first two elements of this Commitment deal with separating ACE utility operations from those of Exelon's generation and marketing businesses and with avoiding preferences to those operations by ACE. The Director of Energy Procurement manages BGS procurements. The personnel who participate do not purchase or sell power, natural gas, or financial instruments for affiliates. Personnel who do so for Exelon's generation and marketing businesses do so through separate organizations. Compensation of the persons engaged in BGS procurement do not depend on sales of power by affiliates. Persons engaged in BGS activities are housed physically separately. ACE has a distinct supply portfolio using resources procured specifically for use in serving ACE BGS customers. Forecasting takes place separately from that of Exelon's generation and market operations. The conduct of the BGS process in New Jersey provides for effective controls on the expression or provision of preference for an affiliate in BGS purchases.

Prior to BGS auctions each fall, ACE personnel engaged in the BGS process sign non-disclosure agreement provisions regarding load, settlements, and all other aspects of the BGS process. They commit to following auction rules and maintaining the integrity of the process. The third-party BGS auction manager and the Energy Acquisitions group review the list of ACE employees with access to specific information, thereby providing both internal and external control over the process.

Exelon operates generation, marketing and trading functions through entities and from locations distinct from those of operating ACE's transmission and distribution businesses. Financial systems and records of PHI and ACE are distinct. There are provisions for controlling the charging of costs for common services, as Chapter IV describes.

The BGS process addresses competitive information comprehensively. A third-party auction manager manages all communications with bidders. Questions from individual potential bidders generate responses to all. Weekly steering committee calls among all four New Jersey EDCs and the auction monitor occur. These methods ensure that all bidders receive the same information. The Energy Acquisitions group maintains responsibility for this commitment.

Management requires annual Standards of Conduct ("SOC") and Code of Conduct ("COC") training, which emphasizes affiliate conduct. The separation of the trading group from the T&D business entities supports compliance as well.

All interconnections go through the PJM queue, which includes a process for evaluating and approving transmission projects. PJM oversees the evaluation.

Conduct-related standards and procedures include Exelon's Code of Business Conduct, Energy Acquisition Risk Management Program, FERC's Standards of Conduct, and an Affiliate Code of Conduct. Exelon's Code of Conduct, supported by annual, required training, covers topics associated with maintaining separation between the generation, marketing and trading functions and the transmission and distribution businesses.

BGS procurement in New Jersey operates under formal structures, procedures, and controls, which serve to preclude such preference. ACE has made no supply purchases outside the BGS process, which incorporates notice provisions regarding acquisition results.

Chapter III addresses non-utility generation contracts these contracts. We found remaining contracts still in operation.

e. No. 90E: PJM Market Monitor Review of PJM Bids

Commitment No. 90E of the Stipulation of Settlement provides that:

> *Exelon agrees that the PJM Market Monitor may review its Demand-Resource bids in PJM energy, reserves and capacity markets.*

Attachment M (Market Monitoring Plan) to the PJM Open Access Transmission Tariff already gives the PJM Market Monitor the power to review these bids.

f. Distributed Energy

Exelon and Old PHI reached a February 25, 2015 settlement with The Alliance for Solar Choice ("TASC") in the Exelon/PHI merger proceedings then before the Maryland Public Service Commission. This agreement obligated PHI to undertake a number of actions to enhance the process of interconnecting behind-the-meter distributed renewable generation and storage energy projects in Maryland. A November 16, 2015 supplemental agreement established a specific set of commitments for both ACE and Delmarva.

These commitments and actions to implement them have included:

- Renewables Planning and Analysis: ACE filed a first report addressing actions responsive to this commitment on June 21, 2016. A following, September 23, 2016 report filed with the BPU discussed how management considers existing and anticipated distributed energy resources in planning. The report describes penetration across the PHI LLC region. The report also describes a distributed-energy stakeholder engagement process.
- Service Territory Maps: the June 21, 2016 report contained a description of technical requirements applicable to interconnection and it described the interactive, searchable map showing the level of restriction (degree of investment required to permit interconnection).
- 90-Day Report: the June 21, 2016 report addresses the criteria and describes how management justified them. It addressed the subjects required, and described stakeholder reporting and review to follow.
- U.S. DOE Research Sharing: the June 21, 2016 report contained a section providing a synopsis of the work with the DOE and the key lessons learned.
- The NREL Report: the June 21, 2016 report discusses PHI LLC criteria in connection with the report by the National Renewable Energy Laboratory and it describes plans for continued discussion with stakeholders.
- Hourly Load Shape and Interconnected Generation: the June 21, 2016 report addressed how PHI LLC considers the hourly generation profiles of distributed energy resources relative to PHI LLC load.
- EDI Access: the June 21, 2016 report noted the availability of such access.
- Inverter Equipment List: the June 21, 2016 report identified the web locations providing that list, a current version of which we examined.
- Confirming Operation as an Interconnection Customer: the June 21, 2016 report cites the establishment of a confirmation date conforming to the agreement and semi-annual reporting requirements.
- Limits on Additional Metering and Monitoring Equipment: The June 21, 2016 report cites the acceptance of limits in the circumstances addressed by this element of the commitment.
- Communication Plan to Promote Solar Generation: A September 19, 2016 report filed with the PBU provides that plan.

2. Conclusions

81. No. 90A: Competition Protections (Electric Generation Interconnection Studies) - - The required list of engineering consulting firms exists and there have been no developer request for studies. ACE has so far met the requirement of this Commitment.

82. No. 90B: Competition Protections (Commitment to Stay in PJM) - - PJM membership continues through the present.

83. No. 90C: Separate Advocacy Organizations for Exelon Generation and Constellation: Exelon and PHI LLC have maintained the representation separation required by this Commitment.

84. No. 90D: Compliance with ACE-PEPCO Merger Order Stipulation - - The requirements of this Commitment have been met so far.

85. No. 90E: PJM Market Monitor Review of PJM Bids - - The PJM market monitor already has the power to review the bids that this commitment addresses.

86. Management has undertaken the activities necessary to fulfill the requirements of the commitments under the TASC agreement, and continues to work with stakeholders, including the Alliance for Solar Choice on further developing the planning, analysis, reporting, administration, and technical requirements of this Commitment.

3. Recommendations

Liberty has no recommendations regarding any of the power market elements of Commitment No.90 or the content of the TASC agreement.

R. Merger Commitment Tracking

Given the large number of commitments and the continuing nature of many of them, we examine the means employed to track status in meeting them.

1. Findings

The Compliance and Ethics group within the EBSCo organization tracks merger commitment status. This tracking occurs at the ordering paragraph level from the two orders that set forth the commitments:

- Order Approving Stipulation of Settlement, Docket No. Em14060581, March 6, 2015, and effective March 19, 2015 (First Merger Order)
- Most Favored Nation Issue, Docket EM14060581, entered October 31, 2016, and effective November 10, 2016 (MFN Merger Order).

A regularly issued status sheet shows, among other things, status as open or closed, and indicates whether compliance with commitments remaining in progress (termed “open”) is or is not on target. It identifies all 50 remaining (roughly half of the total) that remain open as “on target.” The tracking report does not identify actions remaining open, or provide a schedule for their completion (other than any deadlines specified in applicable BPU ordering paragraph, which the list quotes). The status report also does not identify actions required to ensure continuing compliance with those commitments that have a continuing nature. Finally, while Compliance and Ethics tracks commitments, the list does not identify the underlying groups responsible for initial and sustaining compliance. However, this information is contained within merger commitment tracking system (ExCert MCT). ACE files no regular status reports with the BPU. However, a PHI LLC-level legal group lawyer assigned full-time to ACE regulatory proceedings provides formal notices and reports to the BPU on activities undertaken to comply or in connection with merger commitments.

Exelon Internal Audit issued a September 2016 report titled, “2016 Commitments from Merger Proceedings Review.” It tested commitments completed and open to review design implementation effectiveness of commitment tracking, finding them effective. Internal Audit reviewed the report with “Compliance and Ethics management.” The Legal Department’s Merger Commitment Tracking Process (LE-AC-70) governs tracking of merger commitments. The process provides detailed methods for ensuring proper listing of commitment content, compliance activity planning, performance and reporting responsibility. It provides means for addressing items in jeopardy. It calls for use of the Exelon Compliance and Ethics Resource Tracking (ExCERT) system. The system assigns Business Leads, Business Owners, an attorney, and Executive Owners to each commitment. The Business leads report status monthly to executive leadership. A follow-up, July 2017 report continued to find no issues.

A PHI LLC Compliance Tracking Tool Procedure also exists. It calls for entry of compliance items into a tracking tool, review by a Jurisdictional Manager and attorney, and the assignment of a responsible PHI LLC executive, subject matter experts, and a calendar administrator. This system provides alerts for items in jeopardy, and calls for coordination with Exelon's Commitment Tracking Coordinator to ensure alignment between Exelon's ExCERT MCT tracking system and PHI LLC's Compliance Tracking system. Another PHI LLC Procedure (EX-PH-002) calls for the identification of commitments warranting the creation of an Annual Compliance Certification, and establishes the requirements and methods for providing them.

Exelon Internal Audit also reported in September 2016 on its "2016 Pepco Holdings Merger Rate Credit Processing Review." This review included customer identification and credit calculations for New Jersey customers and the completeness, accuracy, and timeliness of required credits. The review found no issues in any of these areas of review.

2. Conclusions

87. Management has adopted a formal, structured and complete process for tracking the integration of PHI LLC into Exelon generally, and for complying with merger commitments, specifically.

Tracking operates under clear sources of responsibility, follows well-designed procedures, incorporates current information, and identifies open items. It has served well on guiding baseline implementation of the merger commitments.

88. The large magnitude and the importance of ongoing compliance obligations call for a focused look at how to manage and report status on a continuing basis. *(See Recommendation #17 below)*

We believe that officer certifications should include annual statements reporting that Exelon, following reasonable examination, has found and confirms compliance with all ongoing merger commitment requirements. An underlying process for providing that examination, under direction of the officer making the certifications is necessary. Redesigning tracking to focus on actions to ensure ongoing compliance will give that process a necessary foundation. For example, certifications that various agreements comply with requirements and have not been changed is much to be preferred over an approach that remains silent on company views about conformity of such documents, or about amendments that may occur to them. Silence might be taken as a sign that no amendments have occurred, but the validity of such an inference has no established basis at present.

A tracking mechanism that identifies what things need to remain as they are, addresses what has happened to them, and supports annual executive declarations of compliance in all respects (save for any listed exceptions) should exist.

3. Recommendations

17. Establish and conduct a regular process for examining, tracking, and reporting of compliance with merger commitments to the BPU. *(See Conclusion #87 above)*

Management needs to identify with respect to each merger commitment each applicable: (a) controlled documents (*e.g.*, an SPE governing document), (b) required and prohibited actions, (c) required or prohibited conditions or circumstances, and (d) other factors whose existence or non-existence is material to sustaining compliance. For each item in these categories, management should determine what investigation is required to sustain compliance, carry out that examination, record findings with respect to sustaining compliance, and explain the nature and extent of any non-compliance found. These activities should occur under the direction of an officer of Exelon at a level sufficient to provide the certification called for under Commitment No. 65, expanded as described below. This officer should be the one who provides such annual certification. The certification should include a statement that, based on reasonable examination the officer certifies that Exelon believes that compliance with all merger commitments has remained and remains in compliance with all merger commitments, save any specifically listed and described.

S. 2010 Audit Recommendations

1. Findings

a. <u>2010 Audit Recommendation 3.1: Allocation Factor Inputs and Calculations</u>

This recommendation, addressing the detailing of allocation factor inputs and calculations, included the following description:

> *Include detailed definitions of the calculations of allocation factors ("Statistical Key Figures" or "SKFs") in the CAM – SKFs are the factors used to allocate common service company expenses to subsidiaries. As discussed above, current CAM and Service Agreement documentation of allocation factors is limited to general descriptions that apply to groups of allocators. A lack of documentation creates a potential for changes to be made to calculations and a possibility for the manipulation of allocation results. Overland recommends that PHI incorporate definitions of all SKFs (allocation methods) in the CAM. The definitions should include descriptions of the inputs into the SKF and description of the calculations at a level of detail sufficient to permit an independent recalculation of the allocation factor by anyone possessing the proper financial or operational data. Overland further recommends that PHI adopt a procedure to notify the BPU of all intended changes in the methods and inputs used to calculate SKFs, including their impact on ACE's allocation percentage (by showing before and after percentage allocations to ACE), before the changes are implemented.*

This recommendation consists of two principal elements:

- Detailing in the Cost Allocation Manual the inputs and calculations for each allocation factor at a level that permits independent validation of the factor

- Notification to the BPU of all intended changes in allocation factor methods and inputs, including before and after ACE percentages under those factors.

The Stipulation of Settlement forming the basis for commitments associated with the Exelon merger moots the second portion of the recommendation from 2010. The earlier subsection of this chapter titled Commitment 74: Execution of General Services Agreement explains the obligation to provide notice of allocation factor changes causing more than a five percent shift in ACE's share of costs under changed factors. ACE disagreed with the first element of the 2010 recommendation. Management stated in the context of this audit that no material change has occurred since its April 20, 2010 response to this recommendation. ACE based its disagreement on the burdens of making a formal change to its manual for changes that may be minor and without substantive effect.

b. <u>2010 Audit Recommendation 3-2: Cost Center and Cost Pool Linkages</u>

This recommendation, addressing affiliate lease costs, included the following description:

> *Develop reports to show: a) how PHISCO's cost centers link with allocation cost pools; and, b) the SKFs (allocation factors) that are applied to cost pools. To facilitate an overall understanding of how service company activities accounted for in individual cost centers are actually allocated to ACE and other subsidiaries, we recommend PHISCO develop the capability to provide:*
>
> *a) a report showing which service company cost centers link to each of PHISCO's 400-plus Secondary Cost Elements (cost pools);*
>
> *b) a report showing the methods (SKFs and ATPs) applied to each cost pool.*
>
> *It is Overland's understanding that establishing these relationships is currently a manual process. PHISCO did this for Overland on a sample basis (for 64 cost pools), but it currently has no automated way of documenting the links among cost centers, cost pools and allocation methods for the service company as a whole or on a regular basis. Providing documentation of these links is fundamental to a high level understanding of PHISCO's allocation process.*

ACE disagreed with the recommendation, citing the following reasons:

- Already existing capability to report SKF and secondary cost elements for each cost center.
- Already existing capability to report secondary cost elements and ATPs for each cost center.
- Uncertain feasibility and costs of creating a single automated report consolidating information for all cost centers
- Lack of benefits for management in creating such a report and already existing ability to provide information that may be requested by external reviewers.

Management reported that it has not undertaken any actions with respect to this recommendation since its April 30, 2010 response to the final report of that audit. Current circumstances and system capabilities, which include a change from SAP, which Old PHI used, require consideration in addressing this recommendation. Management reports cessation of the use of SKFs and ATPs, beginning 2018.

2. Conclusions

89. 2010 Audit Recommendation 3.1: Allocation Factor Inputs and Calculations - -See the Conclusions of the Cost Allocations Chapter, which addresses allocation factors.

We agree that the Cost Allocation Manual by itself need not reach a level of detail that will permit independent calculation of each allocation factor. However, we do agree with the thrust of the recommendation, which seeks to ensure that calculations occur under well-controlled data inputs and calculation methods that are subject to verification and validation. We sought to determine whether such controls do exist for affiliate costs incurred by and for ACE. The Cost Allocations chapter of this report addresses the results of our review, which we consider as addressing the thrust of the first element of 2010 Recommendation 3-1.

90. 2010 Audit Recommendation 3-2: Affiliate Lease Costs - - Cessation of the use of SKFs and ATPs moots the recommendation, but see Cost Allocations Chapter, which addresses allocations.

3. Recommendations

We have no recommendations addressing implementation of recommendations from the 2010 audit.

Chapter VIII Appendix: Summary of Merger Commitment Compliance Status

Summary of Merger Commitment Compliance Status

Compliance Complete - - Not Ongoing	Concern or Question
Compliant - Ongoing	Superseded
Non-Compliant	Addressed in Another Report Chapter

CATEGORY	No.	Description	Nature	To Date	Ongoing	Concern	Change	Notes
No Management Action Required	4	PHI Monel Pool Participation	No Action Required		NO	NO	NO	
	6	Consolidated Tax Adjustment	No Action Required		NO	NO	NO	
	27	Exelon Consent to BPU Jurisdiction	No Action Required		?	YES	?	Effect of consent not clear
	77	Access to EBSC Audit Reports	No Action Required		YES	NO	NO	Action contingent on audits, which have not occurred
	79	Notice of EBSC Regulatory Orders	No Action Required		YES	NO	NO	Notice contingent on orders, which have not occurred
	83	60-Day GSA Change Letters	No Action Required		YES	NO	NO	Letters contingent on GSA changes; GSA has remained unchanged
	84	Filings seeking GSA Changes	No Action Required		YES	NO	NO	Filing contingent on GSA changes; GSA has remained unchanged
	85	PBU Review of GSA/Allocations	No Action Required		YES	NO	NO	
Superseded by MFN	8	Energy Efficiency Funding	Superseded					Superseded by MFN Provision 3d
	20	CBAs, Attrition, and Hiring	Superseded					Superseded by MFN Provision 6
	56	PHISCo Operations & Asset Ownership	Superseded					Superseded by MFN Provision 11
	61	Dividends Subject to Equity Maintenance	Superseded					Superseded by MFN Provision 12

	69	Exelon Board Meetings in New Jersey	Superseded					Modified by MFN Provision 4 to add New Jersey as a location
	70	Exelon NJ Exec Committee Meetings	Superseded					Modified by MFN Provision 4 to add New Jersey as a location
	72	Ring Fencing in Place Within 180 Days	Superseded					Modified by MFN Provision 14
One-Time or Time Limited Action and Complete	3	General Services Agreement	One-Time	Completed	YES	NO	NO	Future reviews of continuing GSA conformity with policies/requirements
	5	ACE Books and Records Location	One-Time	Completed	YES	NO	NO	Records should remain accessible
	7	Rate Credits	One-Time	Completed	NO	NO	NO	
	M3A	Rate Credits	One-Time	Completed	NO	NO	NO	
	9	Future Base Rate Filing	One-Time	Completed	NO	NO	NO	Post-Merger Base Rate Case Completed
	13	SAIFI/CAIDI Goal and Analysis	One-Time	Completed	NO	NO	NO	Target aspirational; required analysis filed
	15	Reliability Improvement Plan	Time-Limited	Completed	YES	NO	NO	Expenditures covered have been reported, reviewed
	18	Deferred Payment Arrangements	One-Time	Completed	YES	NO	NO	Policies, practices, plans reviewed and filed; Chapter XV reviews effectiveness
	21	Post-Employment Benefits	One-Time	Completed	NO	NO	NO	Sponsorship of all plans transferred to Exelon
	31	Special Purpose Entity (SPE) Creation	One-Time	Completed	NO	NO	NO	But See Commitment 32
	33	SPE to Own 100% of PHI	One-Time	Completed	YES	NO	NO	Commitment required PHI ownership transfer to SPE
	60	Non-Consolidation Opinion	One-Time	Completed	NO	NO	NO	
	M13	Ring Fencing Sufficiency Analysis	One-Time	Completed	NO	NO	NO	
	M14	Ring Fencing within 180 Days	One-Time	Completed	NO	NO	NO	Only applicable if petition to modify commitments is filed in the future

Structure - Ongoing	29	Separate/ACE Existence	Ongoing	OK	YES	NO	NO	Monitor periodically for continuing compliance
	41	No PHI Senior Officer Affiliate Positions	Ongoing	OK	YES	NO	NO	Monitor periodically for continuing compliance
	42	SPE Held out as Separate Entity	Ongoing	OK	YES	NO	NO	Monitor periodically for continuing compliance
	52	PHI Subsidiary Assets in Own Names	Ongoing	OK	YES	NO	NO	Monitor periodically for continuing compliance
	M11	PHISCo to Serve PHI Solely	Ongoing	OK	YES	NO	NO	Monitor periodically for continuing compliance
	66	EEDC as Common Service Provider	Ongoing	OK	YES	NO	NO	Monitor periodically for continuing compliance
	67	Exelon Corporate Reorganizations	Ongoing	OK	YES	NO	NO	Monitor periodically for continuing compliance
	M4	Exelon Board Meetings in New Jersey	Ongoing	OK	YES	NO	NO	Monitor periodically for continuing compliance
	M5	NJ Meetings of Exelon Exec Committee	Ongoing	OK	YES	NO	NO	Monitor periodically for continuing compliance
SPE & Golden Share - Ongoing	32	Ownership of SPE	Ongoing	Substantial	YES	YES	YES	Limits should be place on ability to transfer EEDC ownership
	34	Limit on SPE Functions & Employees	Ongoing	OK	YES	NO	NO	Monitor periodically for continuing compliance
	35	SPE Capitalization	Ongoing	OK	YES	NO	NO	Monitor periodically for continuing compliance
	36	SPE Directors	Ongoing	Substantial	YES	YES	YES	Bar current/former Exelon entity officers/employees as independent SPE directors
	37	Golden Share	Ongoing	Substantial	YES	YES	YES	Preclude financial conflicts; clarify duties/standards for Golden Share voting
	38	PHI Board of Directors	Ongoing	Substantial	YES	YES	YES	Limit PHI board to 7 members, at least 4 independent

[redacted]	39	Consents to SPE Bankruptcy	Ongoing	Substantial	YES	YES	YES	Golden Share bankruptcy consent requirement should not be removable
	-	LLC Amendment	Ongoing	Substantial	YES	YES	YES	Preclude Amendments to Ring-Fencing Protections
	40	Arms-Length SPE Relationships	Ongoing	OK	YES	NO	NO	Monitor periodically for continuing compliance
	43	Separate SPE Books and Records	Ongoing	OK	YES	NO	NO	Monitor periodically for continuing compliance
	44	SPE to Comply with GAAP	Ongoing	OK	YES	NO	NO	Monitor periodically for continuing compliance
	45	SPE Liability Accounting and Management	Ongoing	OK	YES	NO	NO	Monitor periodically for continuing compliance
	46	No SPE Obligation for Others' Debts	Ongoing	OK	YES	NO	NO	Monitor periodically for continuing compliance
	51	No SPE Funds Commingling	Ongoing	OK	YES	NO	NO	Monitor periodically for continuing compliance
	54	SPE Property Held in Its Name	Ongoing	OK	YES	NO	NO	Monitor periodically for continuing compliance
	58	Separate SPE Name and Marks	Ongoing	OK	YES	NO	NO	Monitor periodically for continuing compliance
	59	SPE Organizational Document Amendment	Ongoing	Substantial	YES	YES	YES	Golden Share consent requirements should not be removable
Financial Separation - Ongoing	30	No ACE Acquisition Debt	Ongoing	OK	YES	NO	NO	Complete re: Exelon merger; examine in any future Exelon mergers
	47	Separate PHI Utility Ratings	Ongoing	OK	YES	NO	NO	Monitor periodically for continuing compliance
	48	No PHI Liability for Affiliate Debts	Ongoing	OK	YES	NO	NO	Monitor periodically for continuing compliance
	49	No SPE Pledge of Assets for Others	Ongoing	OK	YES	NO	NO	Monitor periodically for continuing compliance
	50	ACE Debt Cross Defaults	Ongoing	OK	YES	NO	NO	Monitor periodically for continuing compliance
	53	SPE Director Approval of Funds Transfers	Ongoing	OK	YES	NO	NO	Monitor periodically for continuing compliance

	55	Limits on Money Pool Participation	Ongoing	OK	YES	NO	NO	Monitor periodically for continuing compliance
	62	Dividends if Below Investment Grade	Ongoing	OK	YES	NO	NO	Monitor periodically for continuing compliance
	63	Equity Maintenance Reports to BPU	Ongoing	OK	YES	NO	NO	Monitor periodically for continuing compliance
	M12	Minimum Equity Ratio Maintenance	Ongoing	OK	YES	NO	NO	Monitor periodically for continuing compliance
Reliability - Ongoing	14	Year 2020 SAIFI/CAIDI Target	Future	In Process	YES	NO	NO	Progress being made; continue quarterly progress monitoring
	16	Reliability Improvement Plan Continuation	Ongoing	In Process	YES	NO	NO	Expenditures regularly reported; forecasts steady; continue monitoring
Customer Service-Ongoing	17	Customer Service Issues	Ongoing	In Process	YES	NO	NO	Activities and reporting have been as required; continue monitoring
	M3B	Low-Income Customer Funding	Ongoing	In Process	YES	NO	NO	Programs defined, funding provided; monitor program continuance
	24	Low-Income Assistance	Ongoing	OK	YES	NO	NO	Monitor periodically for continuing compliance
	M3D	Energy Efficiency Programs	Ongoing	In Process	YES	NO	NO	Monitor plans to increase pace of Quick Home Energy activities
	26	Energy/Energy Efficiency	Ongoing	In Process	YES	YES	YES	Enhance web-site & develop scalability to address new state energy legislation
Operations-Ongoing	19	Headquarters Location	Ongoing	OK	YES	NO	NO	NJ resources and locations not diminished; continue monitoring
	25	Charitable/Community	Ongoing	OK	YES	NO	NO	Minimum annually required amounts maintained so far

	71	Delegations of Authority to PHI Officers	Ongoing	OK	YES	NO	NO	Monitor periodically for continuing compliance
Employment & Diversity	22	Outplacement Services	Ongoing	OK	YES	NO	NO	All costs likely addressed in rate proceedings already
	23	Supplier Diversity	Ongoing	OK	YES	NO	NO	Monitor periodically for continuing compliance
	M3C	Work Force Development Funding	Ongoing	OK	YES	NO	NO	Monitor periodically for continuing compliance
	M6	Bargaining Agreements, Attrition, Hiring	Ongoing	OK	YES	NO	NO	Monitor periodically for continuing compliance
	M7	ACE Employment Data Reporting	Ongoing	OK	YES	NO	NO	Monitor periodically for continuing compliance
Accounting & Rates - Ongoing	10	Acquisition Premium/Transaction Costs	Ongoing	OK	YES	NO	NO	Residual costs, addressable next rate case
	11	Definition of Transaction Costs	Ongoing	OK	YES	NO	NO	Residual costs, addressable next rate case
	12	Rate Filing Capital Structure	Ongoing	OK	YES	NO	NO	Prior cases litigated; future cases will determine compliance
	28	ACE Books and Records	Ongoing	OK	YES	NO	NO	Monitor periodically for continuing compliance
	68	SPE Costs Not to Be Borne by ACE	Ongoing	OK	YES	NO	NO	Monitor periodically for continuing compliance
	M9	Oracle Conversion Cost Recovery	Ongoing	OK	YES	NO	NO	Future rate cases can address non-recovery of Oracle conversion costs
Affiliates - Ongoing	57	PHI Non-Utility Subs Transfer to Exelon	Ongoing	OK	YES	NO	NO	Monitor periodically for continuing compliance
	73	Compliance with Affiliate Requirements						See Chapters IV and VII
	74	General Services Agreement Execution	Ongoing	OK	YES	NO	NO	Report Chapter IV addresses substantive requirements; monitor periodically
	75	Affiliate Charge Controls						See Chapter IV
	76	Maximizing Directly Charged EBSC Costs	Ongoing	Significant Gap	YES	YES	YES	Major Corrective Action Required

	78	Notice of EBSC Regulatory Audits	Ongoing	OK	YES	NO	NO	Monitor periodically for continuing compliance
	80	Costs of EBSC Assets for ACE Use	Ongoing	OK	YES	NO	NO	Monitor periodically for continuing compliance
	81	Depreciating EBSC Assets for ACE Use	Ongoing	OK	YES	NO	NO	Monitor periodically for continuing compliance
	82	Return on EBSC Assets for ACE Use	Ongoing	OK	YES	NO	NO	Monitor periodically for continuing compliance
	86	ACE Right to Opt Out of EBSC Services	Ongoing	Substantial	YES	YES	YES	Technically in compliance, but scope of permitted opting-out should be defined
	87	EBSCo Costs/Allocations Reviews						See Chapters IV and VII
	88	Access to Affiliate Books and Records	Ongoing	Substantial	YES	YES	YES	Find means to expedite information provided from Exelon/EBSC
	89	Abiding by Affiliate, BGS Regulations	Ongoing	OK	YES	NO	NO	Monitor periodically for continuing compliance
Reporting	64	Ring Fencing, Other Requirement Reports	Ongoing	OK	YES	YES	YES	Provide for cyclical reporting of Merger Commitment Compliance
	65	Annual Exelon Officer Certification	Ongoing	?	YES	?	?	
	-	Merger Compliance Tracking	Ongoing	OK	YES	YES	YES	Develop an ongoing tracking system to support Officer Certification
	M8	Merger Economic Benefits Reports	Ongoing	OK	YES	NO	NO	Monitor periodically for continuing compliance
	M10	Safety Reporting	Ongoing	OK	YES	NO	NO	Monitor periodically for continuing compliance
	M15	Exelon Utilities Metrics Reports	Ongoing	OK	YES	YES	YES	Reports should be filed with BPU by end of Q1 of the following year
Power Markets	90A	Electric Generation Interconnection Studies	Ongoing	OK	YES	NO	NO	Monitor periodically for continuing compliance
	90B	Commitment to Remain in PJM	Ongoing	OK	YES	NO	NO	
	90C	Separate Affiliate Advocacy	Ongoing	OK	YES	NO	NO	

	90D	ACE-PEPCO Merger Stipulation	Ongoing	OK	YES	NO	NO	Monitor periodically for continuing compliance
	90E	PJM Market Monitor Review of PJM Bids	Ongoing	OK	YES	NO	NO	Monitor periodically for continuing compliance
	T1	Distributed Energy	Ongoing	OK	YES	NO	NO	Monitor periodically for continuing compliance

Chapter IX: Executive Management and Governance Table of Contents

Chapter IX: Executive Management and Governance

A. Background

This task addresses corporate governance, board structure and composition, overall Exelon/PHI LLC executive management, the focus of the boards and executive management on utility operation, separation of utility and non-utility businesses, internal controls, audit independence, and an identification of lawsuits implicating governance and executive management and having a potentially significant impact on ACE, PHI LLC, or Exelon. The work of this task includes key issues relating to director experience, capability, independence, and oversight. We specifically examined the following areas:

- Governance Principles
- Exelon, PHI LLC, and service company board structure, organization, membership, and operation
- Exelon board focus on utility operations
- Exelon-level executive organization structure and roles
- PHI-level executive organization structure and roles
- Exelon's focus on PHI LLC and ACE utility operations
- Delegation of authority by Exelon to PHI-level management
- PHI executive and service company focus on ACE utility operations
- ACE performance versus that of other Exelon utilities
- Internal controls, including Sarbanes Oxley (SOX) and exchange-related programs and activities
- Internal Audit role and independence
- Compliance and Ethics approach and programs.

The structure within which ACE operates engages two boards with outside directors, following the Exelon merger. Exelon's parent board continues, but with the addition of a new set of utility operations to govern. The PHI board continues at the surviving entity - - PHI LLC - - but in a restructured form and subject to responsibilities arising from merger commitments. Many of these commitments address PHI LLC's governance, operations, and financial independence and ring-fencing. Chapter VIII, addressing Exelon merger conditions, describes these commitments and provides our assessment of efforts to meet them. How the two boards interact with respect to PHI LLC and ACE plans, objectives, resources, and operational performance formed a central aspect of our assessment here. Taking compliance with merger commitments as a given, this chapter goes further, assessing the effectiveness of current structures and operations and, if appropriate, how they may change while conforming to those commitments.

Our examination of internal controls placed principal emphases on management's controls framework, management's execution of its SOX obligations, and internal auditing (particularly as it concerns affiliate transactions and costs). We reviewed management's design, structure, recording, risk assessment, resources, reporting avenues, and response methods and tracking in the area of compliance and ethics. The industry now commonly recognizes a comprehensive approach and methods, vigorously supported by top leadership, and well-communicated and regularly reinforced with respect to importance and consequences, to be a central component in creating an atmosphere and attitudes supportive of fair, honest, ethical, and inclusive behavior.

We examined internal control systems to determine whether adequate measures exist to provide sufficient assurances of honestly transacted and accurately recorded dealings between ACE and affiliates, in accord with applicable requirements. We examined whether internal controls exist and have been applied in a manner that meets reasonable expectations about preventing, detecting, and remediating irregular, illegal, and otherwise improper transactions. We found organizations, resources, assignments of responsibility, accountability, programs, measures, deficiency identification and remediation, and documentation appropriate.

B. Findings - - Boards of Directors

1. Exelon's Governance Principles

An 18-page Exelon Corporate Governance Principles document begins with a description of the role of the parent company's board of directors. The listed roles include several overarching responsibilities typical of the industry; *i.e.*, selection and oversight of senior management, and development and execution of strategy and long-range business plans. Chapter XII of this report addresses the Exelon board's role in that development. These Exelon principles also identify a broad range of functions, activities, and risks subject to board oversight:

- Safety & Reliability
- Capital Structure
- Capital Allocation
- Financing
- Investments
- Enterprise Risks
- Commodity Markets
- Market Design
- Enterprise Security
- Cyber Security
- Operating Risks
- Financial Performance
- Executive Comp.
- Corp. Citizenship
- Sustainability
- Environ. Stewardship
- Reputation
- Social Responsibility
- Business Ethics
- Governance Practices

2. Overall Board Structure

Only the Exelon and PHI LLC boards have non-management members. The PHI utilities, ACE, Delmarva Power and Pepco, have boards, as they must under the laws in the states of their incorporation. These utility boards, all of whose members hold company-management positions, exercise legally-required, pro forma functions; *e.g.,* officers, declaration of dividends, authorization of banking or financing transactions and the sale or disposition of real estate. High-level oversight comes from the PHI LLC and Exelon boards. The Exelon governance structure, influenced strongly by merger commitments, relies upon a parent-level and upon a PHI LLC level board to provide oversight influenced by independent directors. Independent directors fill a majority of the seats on both boards.

3. The Exelon Parent Board

a. Membership

Exelon does not place limits on board size, leaving the number of members to the board's discretion. Exelon's governance principles place value on personal background, skill, experience, thought, ethnicity/race, gender, age, and nationality diversity. The current board members, listed below, demonstrate a representative level of diversity, as measured by the listed characteristics. A board Corporate Governance Committee has responsibility for applying the desired personal attributes and for assessing the breadth of functional skills and experience in recommending nominees for election to the board. The Corporate Governance Committee also periodically reassesses selection criteria in the face of industry and enterprise changes.

The former Chair and CEO of Constellation, whose operations since merged with those of Exelon, serves as Exelon's board chair. The corporate governance principles require selection of a lead director should the same person (not the case now) serve as board chair and Exelon CEO. Those principles also require "a substantial majority" of its board to consist of independent directors. The Chair and all other Exelon directors, with one exception, qualify as independent under New York Stock Exchange and Exelon standards. The only Exelon board member not deemed independent is the company's CEO. The sitting directors nominated for election at the 2018 annual meeting consist of:

- Exelon President and CEO
- Retired Vice Chair and Midwest Area Managing Partner of Ernst & Young
- Former Chair and CEO of FGIC, which provides bond financial guarantee insurance and other credit enhancement in public finance and other obligations, preceded by finance-related corporate and firm legal practice
- Former Co-Chair of a private equity firm and senior executive in global investment banking
- Chair of eight-state, water and wastewater company Aqua America and former environmental official in Pennsylvania and at the U.S. EPA
- Executive VP and Chief Information Officer of airline company United Continental Holdings, and former IT executive with Canadian telecommunications company Rogers Communications, Texas-based utility/energy company, Energy Future Holdings Corporation, and General Electric
- President of the charitable Alfred P. Sloan Foundation and MIT emeritus professor of economics and management, focusing on the electric power industry pricing, fuel supply, demand, generating technology, and regulation
- Former food-manufacturer McCormick & Company Board Chair and president
- Retired nuclear navy admiral and strategic planning and risk assessment consultant for maritime issues
- Founder and chairman of an investment firm managing over $9 billion in assets under management
- Former Chair and CEO of Constellation Energy and senior executive with Deutsche Bank and banking companies it acquired
- Chair and CEO of $101 billion regional bank holding company Huntington Bancshares Incorporated (since 2009), a regional bank holding company
- Former CEO and director of Energy Future Holdings Corp. (a Dallas-based energy company owning the largest Texas electricity distribution utility and a large electricity generation portfolio of competitive and regulated businesses), previously a senior executive with Exelon and Exelon Generation.

The independent members of the Exelon board average 65 years of age. The governance principles require retirement of directors by the annual meeting following their 75th birthday. They must also offer to retire at 65, giving the board the option to determine whether to accept that offer. No term limits exist, with the retirement age provision intended to serve as a limiter. The age provision will affect two of 12 directors in the next three years. Average tenure among the independent directors standing for re-election this year is nine years.

b. Exelon Board Meetings

The Exelon board of directors meets quarterly, and participates in a September planning retreat as well. This meeting frequency is low when compared with meeting frequency at the largest U.S. energy utility companies, based on their most recent proxy statements. On the whole, the 11 largest enterprises meet roughly twice as frequently as the Exelon board schedule indicates, with the following list based ranked by size using market value in 2017:

- NextEra - - 6 regular meetings plus special ones as required
- Duke Energy - - 7 meetings
- Southern Company - - 7 meetings
- Dominion - - 11 meetings
- PG&E - - 14 parent and 13 utility board meetings
- AEP - - 8 meetings (2 of them telephonic)
- Edison International (Southern Cal Edison) - - 11 meetings
- PPL - - 7 meetings
- ConEd - - 11 meetings
- PSEG - - 12 parent and 6 utility board meetings.

Avangrid is of interest because it comprises the publicly-traded, distinct entity that operates the U.S. utility operations owned predominantly by Iberdrola, one of the world's largest utility holding companies. Its proxy statement lists seven annual meetings of the U.S. entity's board of directors. The board of Sempra, another large company with large, non-utility energy operations, met eight times according to its most recent proxy statement. More recent public filings from these companies may show changed meeting frequencies. and special circumstances, such as contemplated of pending acquisitions or consolidations can require added meetings from time to time. Nevertheless, the comparatively low base number of Exelon board meetings remains notable.

c. Self-Assessments and Independent Director Meetings

The governance principles call for annual board, board chairman, board committee, and CEO self-assessments of performance. The principles also call for regular meetings of the independent directors outside the presence of management directors. The independent directors serve on a comparatively modest number of other boards.

The governance principles give the Exelon board a significant role in succession planning and management development. The Corporate Governance Committee reviews succession planning for the CEO and President. The Compensation and Leadership Development Committee reviews succession planning for other executive officers, and elects all officers other than the board Chair, CEO and President, upon the recommendation of the CEO.

d. Exelon Board Committees

The Exelon board employs six standing committees:

- Audit (membership limited to independent directors)
- Compensation and Leadership Development (membership limited to independent directors)
- Corporate Governance (membership limited to independent directors)
- Generation Oversight
- Finance and Risk
- Investment Oversight Committee.

Each operates under a documented charter, which committee members are charged with reviewing annually.

All standing Committees have charters that outline the purpose and responsibilities of the Committees as recommended by the Corporate Governance Committee and approved by the Board. Each Committee reviews its charter annually. Any resulting recommendations for changes to Committee charters are presented to the Corporate Governance Committee for its review and recommendation to the Board for its approval.

e. Finance and Risk Committee

This ten-director committee, consisting solely of independent directors, has a clear set of charter-documented responsibilities for making recommendations to the full board, for overseeing, or for reviewing:

- Capital Structure and Liquidity
  - Capital structure changes, financing plans and programs, dividend policy, and or issuance of securities
  - Liquidity and related financial risks and treasury policies, lines of credit, other credit facilities, and major commercial and investment banking relationships.
  - Issuance of debt and equity securities and other debt instruments
  - Establishment or amendment of credit facilities and interest rate hedging
- Credit Ratings
  - Periodic credit metrics and ratings reports and relationships with rating agencies
  - Credit rating goals and strategies to maintain rating objectives
- Budget and Financial Performance
  - Annual financial plan, budget, utility regulatory strategies and dividend policy
  - Budget performance monitoring and variance approvals
  - Financial condition and operating results, including sources and uses of cash
  - Significant capital investments, pension and other benefit trust contributions, nuclear decommissioning trust funding, and utility rate strategies
- Transactions
  - Financial implications of significant transactions (*e.g.*, acquisitions and divestitures)

    - Energy, capacity, standard load-serving, other commodity, power purchase, weather derivative, and similar transactions.
    - Annual nuclear fuel procurement strategy and nuclear fuel and processing transactions
- Risk Assessment and Management
    - Policies and processes to assess, monitor, manage and control financial, operational, business, and commodity-market risks
    - Policies and processes for risk assessment, management and reporting, limits, tolerances, roles and responsibilities, mitigation decisions, and assumptions.
    - Advice to the Audit Committee in its review of processes for assessing and managing risk exposure
    - Policies and procedures permitting financial speculation in commodity or financial products and use of derivatives
    - Steps taken by management to address risk management policies and procedures compliance failures
    - Advice to the Compensation and Leadership Development Committee for its consideration of financial and operational risk in relation to compensation
    - Insurance program and policies
    - Significant legal matters and use and fees of outside counsel.

4. *Service Company and Utility Boards of Directors*

PHISCo and ACE do not have independent governing bodies. The President and CEO serves as the only ACE board member. He and the PHI Senior Vice President, Chief Financial Officer and Treasurer serve as the only members of the PHISCo boards. The PHISCo board does not conduct meetings; the PHI LLC board addresses matters involving or affecting it. The PHI LLC board, discusses, but receives no documented reports regarding PHISCo plans, resources, results, or operations.

5. *PHI LLC Board of Directors*

a. Pre-Merger PHI Board

The pre-merger, nine-member PHI board of directors consisted of the parent Chairman of the Board, who also served as President and CEO, and eight independent members. It met annually between 7 and 12 times from 2011 and 2014 (and more often in 2015, as the Exelon acquisition remained in progress. Each board meeting included time for the independent members to meet with no management attendance, under the leadership of a Lead Independent Director. All committees, except for the Executive Committee followed a similar practice. The pre-merger board's five committees, all of whom operated under well-documented charters, consisted of the:

- Audit Committee
- Compensation/Human Resources Committee
- Corporate Governance/Nominating Committee, referred to as the Nominating Committee
- Finance Committee
- Executive Committee.

The Compensation Committee regularly met separately with its independent compensation consultant and the Audit Committee with PHI's General Auditor and with the independent public accounting firm.

b. Post-Merger PHI LLC Board

The seven-member PHI LLC board currently has four independent directors. Among them are five current or former chief executives, another who founded and still leads his own firm and a former chair of the District of Columbia City Council. The three management directors are:

- *Exelon President & CEO*
- *Exelon Utilities CEO*
- *PHI LLC President & CEO*

The PHI Corporate Governance Principles require that PHI LLC have a board of directors consisting of seven or more members, a majority of whom must be independent, and at least three of whom must have a primary residence or principal place of business or employment in the service territory of the PHI utilities. Except for New Jersey, at least one member must have a residence or principal place of business or employment in the states where the PHI utilities serve retail customers. The current PHI LLC board, however, does include a resident of New Jersey.

The PHI LLC board no longer employs a separate nominating or governance committee and no policy exists for identifying director candidates. The criteria for selecting members of the Exelon Board of Directors, however applies "as a guide for selecting subsidiary directors." The qualifications these criteria establish include:

- Highest personal and professional ethics, integrity and values
- An inquiring and independent mind
- Practical wisdom and mature judgment
- Broad training and experience at the policy making level
- Expertise useful to the company and complementary to the background and experience of other members, to optimize the balance of expertise
- Willingness to devote the time required to carry out board duties and responsibilities
- Commitment to serve over a period supporting development of company operations
- Avoidance of activities or interests conflicting with director responsibilities.

The Exelon Corporate Governance Principles also value "diversity in personal background, race, gender, age and nationality" in director selection which form important considerations in selecting candidates. Neither before nor after the merger has the PHI board prepared a matrix comparing existing with desirable blend of board member backgrounds, skills and experiences.

The PHI LLC board does not conduct self-assessments and it has not undertaken any external assessments or evaluations of board effectiveness. Comments to a draft of this report indicated a plan to initiate self-assessments in 2020. PHI LLC, PHISCo, and ACE do not employ or participate in any structured committees, councils or other similar bodies to provide stakeholder input on matters affecting ACE utility operations. ACE does participate in Customer Service Improvement Plan meetings with BPU Staff and Division of Rate Counsel and conducts customer focus groups on ACE's "public messaging."

c. Definition of "Independent Director"

Exelon applies the industry-standard, New York Stock Exchange definition of an independent director to the affected parent and to the PHI LLC members. Section 303A.02 of the exchanges *NYSE Listed Company Manual* sets forth these disqualifying characteristics for independent directors:

- Material relationships with the company directly or as a partner, shareholder or officer of an organization having a relationship, considering:
  - Sources of the director's compensation
  - Relationships with the parent of subsidiaries and affiliates
- Employment by the director with the company within three years
- Service by the director or immediate family members within three years as an executive officer of the company
- Receipt by the director or immediate family members within the past three years of more than $120,000 in direct compensation, except for director and committee fees, pensions, and deferred compensation for prior service
- Current partnership in or employment with the company's internal or external auditor by the director or immediate family members
- Partnership in or employment by such a firm within the past three years, if personally worked on the company audit within that time
- Employment as an executive officer of another company by the director and immediate family members in cases where the company's present executive officers at the same time have served on that company's compensation committee
- Current employment by the director or immediate family member as an executive officer of a company making payments to or receiving payments from the listed company in the past three years exceeding the greater of $1 million annually or two percent of the other company's consolidated gross revenues.

Interlocking directorships can also have a bearing on independence, particularly in circumstances, as here, where independence of the PHI LLC board with respect to that of Exelon has been carefully structured to preserve utility independence in times of financial distress at the holding company or affiliate levels. At such times, as circumstances demonstrate at Oncor, one of the country's largest electricity distribution utility as well as the largest Texas electricity distribution utility, this independence can prove to be of very substantial significance. PHI LLC has not maintained information on the dates when its directors served on other boards. The biographical information management provided us identified the following principal relationships (including former ones) of the PHI LLC directors:

- Management Directors
  - Parent Exelon's President and CEO: (1) AEGIS Insurance Services, (2) Edison Electric Institute, (3) Institute of Nuclear Power Operators, (4) Nuclear Energy

    - Institute, (5) Economic Club of Washington, D.C., (6) Chicago Museum of Science & Industry, (7) Get-In Chicago
    - Exelon Utilities President and CEO: (1) Independence Blue Cross, (2) Greater Philadelphia Chamber of Commerce, (3) Electric Power Research Institute (EPRI), (4) Pennsylvania Business Council, (5) Energy Association of Pennsylvania, (6) The Franklin Institute, (7) Drexel University, (8) American Gas Association (AGA), (9) Pennsylvania Economy League, (10) YMCA of Greater Philadelphia
    - PHI LLC President and CEO: (1) Maryland Business Roundtable for Education, (2) Trust for the National Mall, (3) Smithsonian's National Zoo and Conservation Biology Institute, (4) D.C. Policy Center of the Federal City Council, (5) American Association of Blacks in Energy, (6) United Way of the National Capital Area, (7) Southeastern Electric Exchange, (8) Association of Edison Illuminating Companies, (9) Greater Washington Board of Trade, (10) Edison Foundation Institute for Electric Innovation.
- Independent Directors
    - Former Care First, Inc. Board of Directors Chair: (1) D.C. Board of Education officer, (2) Group Hospitalization and Medical Services, Inc.
    - Founder and CEO of a global administrative and information technology company: (1) Chairman of First State Innovation, (2) Council on Competitiveness in Washington, D.C., (3) University City Science Center, (4) Delaware Business Roundtable, (5) Delaware State Chamber Board of Directors, (6) State of Delaware's Vision Coalition, (7) Greater Philadelphia Chamber of Commerce, (8) Select Greater Philadelphia's Strategic Operating Committee, (9) Federal Reserve Bank of Philadelphia's Economic Advisory Council, (10) Easter Seals of Delaware and Maryland's Eastern Shore
    - President and CEO, Chamber of Commerce Southern New Jersey: (1) NJ Business & Industry Association, (2) NJ Casino Reinvestment Development Authority, (3) Stockton University Foundation Board
    - Business Consulting Firm President: (1) Board of Visitors for the University of Maryland School of Medicine, (2) Hippodrome Foundation, (3) Central Maryland Transportation Alliance, (4) Judicial Nominations Commission for Baltimore District and Circuit Courts, (5) Associated Black Charities, (6) Baltimore Community Foundation, (7) Enoch Pratt Free Library.

Two of the non-management directors lead organizations that had financial relationships with PHI LLC or Exelon entities that were within the independence criteria of the NYSE. One heads a consulting firm that received over $1.4 million from Exelon from 2012 through 2017 (averaging $236,000 per year). That director has also served as a director of another Exelon subsidiary, receiving an additional $75,000 per year or so in that role. Another of the non-management director founded and heads an entity that PHI engaged in 2017 during which it paid approximately $202,730, followed by $322,000 to date in 2018. The firm's web-site publicizes its "partnership" relationships with Exelon, PHI LLC, and Delmarva. That director also serves on a major chamber of commerce board with a senior Exelon executive.

d. Stakeholder Councils and Committees

The PHI LLC CEO considers outreach to and communication with stakeholders a central aspect of his responsibilities. A similar role comprised a central element of the ACE President's responsibilities. Neither PHI LLC nor ACE, however, employ or participate in committees, councils or other similar bodies that provide a structure forum for stakeholder input.

e. Regular Reports to the PHI LLC Board

The PHI LLC board meets quarterly. The board regularly receives a series of PHI-level reports that include, as management deems appropriate information specific to ACE:

- *Financial Update*
- *Utility Scorecard*
- *Reliability Update*
- *Regulatory Update*
- *Legislative Update*
- *Major Projects Status Report*
- *Integration & Commitments Update*
- *Significant Legal Matters Quarterly Report*

The PHI LLC board also receives the following annual reports:

- *Human Resources Update*
- *Gas Business Update*
- *Cyber Security Update*
- *Physical Security Update*
- *Safety, Environmental Update*
- *Benchmarking Overview*
  Business Planning Overview
- *Customer Operations Update*
- *Corporate Relations Update*

The PHI LLC Board of Directors also receives additional reports on specific projects on an as-needed basis. Each of the reports identified above covers PHI LLC generally.

C. Conclusions - - Boards of Directors

1. The Exelon board operates under a sound structure, with a largely independent membership and a broad and impressive array of skills and experience, and in a manner that provides a strong focus on management and operations at its utility enterprises.

Exelon employs well developed, comprehensive, documented governance principles and documents. All but one member (the CEO) qualifies as independent, although another member was an executive at an entity since merged with Exelon. The members, selected through a process that engages other directors, present an impressive blend of skills and very senior experience in the business in which Exelon operates and U.S. industry generally. Exelon employs a current definition of "independence" for its directors. Committees have the required numbers of independent members. There are regular sessions of independent-directors alone.

The average age of major U.S. company directors has been rising. The average Exelon director age of 65 is consistent, albeit a bit high by comparison. While lowering it over time has appeal, the strength that the members bring to Exelon certainly reflect a reasonable tradeoff.

2. Exelon's parent board operates under an appropriate committee structure, and sound governance documents.

The array of committees and the committing of key decisions to independent-only committees is appropriate. The committees operate under well structured, comprehensive governing documents.

3. The Exelon board and its committees demonstrate an appropriate focus on utility operations, both generally and at the individual utility level.

Our interviews with members and review of information provided to and addressed by the committees shows a reasonably strong focus on utility operations. The data provided to committees and to the board, in general, show it to provide sufficient detail for members to address performance at both the overall and individual (ACE, for example) level.

Our interviews found the members conversant in utility management, operations, and emergent issues. We found the Exelon directors aware of strategies, plans, and resources dedicated to them, and the organizational separation of Exelon's distribution-utility, transmission, and generation and marketing businesses. The directors regularly receive adequate financial information and interviews verified their familiarity with financial circumstances. Exelon places a strong focus on risk identification and mitigation - - board engagement in and knowledge of enterprise risk management at Exelon was evident.

The Exelon board has regularly received reports of compliance with merger commitments and members demonstrated an awareness of the importance of attention to utility ring-fencing. In particular, we found attention to ensuring effective integration of the PHI utilities, accompanied by specific tracking and reporting to the board of progress in meeting merger commitments.
The Exelon Board regularly receives reports of performance against plans and targets at the overall and entity-specific levels. The members demonstrated a reasonably strong awareness of performance drivers at the utility level.

4. **The Exelon board of directors meets with unusual infrequency, particularly for an entity with its range of business and large numbers of utility operations.** *(See Recommendation #1)*

The Exelon board's quarterly meetings may comprise the most infrequent among large U.S. utility holding companies. The size, importance, variety, risks, and opportunities of its generation and marketing operations clearly require a great deal of time in ensuring that they receive strong oversight. Adding to the already imposing burdens associated with those businesses, Exelon's utility operations are large and have been growing and expanding. They too impose great burdens.

As Chapter V, addressing executive management and capital allocation describes, Exelon has redirected its focus from generation and marketing to utility operations. Moreover, Exelon Utilities has just reorganized to address this change in direction and the emergence of new and different technologies, opportunities, risks, and utility regulatory policies.

Given the overall size of Exelon and of its utility operations, considering its change in focus, and in light of its recognition of the need for a transition from a shorter-term operational to a longer-term utility strategic focus, we believe that more frequent board engagement is in order.

5. **The PHI LLC board meets the requirements of merger conditions and it operates under an appropriate structure and governance documentation.**

The documents governing PHI LLC board are also sufficiently clear and comprehensive. Chapter VIII, *Merger Conditions*, provides our conclusions and recommendations about them and a series of associated agreements as they implicate merger conditions.

6. PHI LLC board membership of seven, with representation from the four jurisdictions involved needs to remain a central element of the governance structure. *(See Recommendation #2)*

The current structure calls for membership of seven and it has produced independent members from the four PHI utility jurisdictions. Retaining that number and that independent membership distribution is essential to ensuring appropriate ring-fencing. It is also important in ensuring attention to New Jersey needs and circumstances.

7. The PHI LLC board does not exhibit the range of skills that existed before the Exelon merger, but the need for controlling its size and composition limit practical options for change.

We found each of the four independent PHI LLC board members impressive in their credentials and in their ties and commitments to their communities. However, in significant part due to the low numbers (four independent members), their range of experience does not, nor can one reasonably expect it to extend nearly as wide as that of the pre-merger PHI board. Our concern about increasing board size means that we do not see a change on the horizon. However, despite confidence in the capabilities of the current members, the wide range of activities that the PHI LLC board is asked by management to review underscores the importance of retaining strong membership, committing sufficient time and effort, and understanding that, ultimately, Exelon-level governance needs to be more active and detailed than would be the case were the PHI LLC board to have the same numbers and types of directors as it had before the merger.

8. The PHI LLC board focuses adequately on utility issues and needs at the PHI LLC and at the individual PHI operating level, but meets too infrequently, and engages insufficiently with the Exelon board. *(See Recommendation #1)*

The circumstances described in the preceding conclusion point to the need for the PHI LLC board to: (a) meet frequently, (b) inform, promote, and engage in robust discussion of PHI and ACE level issues, and (c) engage directly with the Exelon board. The PHI LLC board meets only quarterly and it does not engage directly with the Exelon board.

9. The four non-management members of the PHI LLC board comprise a sound, first post-merger group, but particular sensitivity to their business relationships with Exelon and PHI LLC entities needs to guide future membership. *(See Recommendation #3)*

Whether technically complying with the NYSE requirements or not, some PHI LLC independent directors (not the one associated with New Jersey) have had reasonably valuable economic relationships with Exelon and PHI entities. A business founded by one touts its "partnership" with PHI entities. A core purpose of the PHI LLC board structure is to make it independent of interests controlled by Exelon when such independence is most valuable - - and likely critical.

We found each of the four independent directors capable, well-connected to their larger "communities," dedicated to their director roles, respectful of the local perspectives they represent yet concerned about PHI LLC from a holistic perspective, and understanding of the need for independent analysis and perspectives should they be required to cast votes in times of severe financial distress somewhere in the Exelon family of companies. The circumstances do not call for any disruption of present arrangements, but rather a consideration of how to approach the question of independence as inevitable transitions in membership arise.

10. The PHI LLC board does not engage in long-range planning, candidate replacement identification, self-assess its performance, or contribute to PHI-entity executive compensation in a formally described way. *(See Recommendation #4)*

Agendas of and presentations to the PHI LLC board bear resemblance to what one sees at holding company boards. We found all members conversant with planning, board membership, how well it performs, executive compensation and the like. However, we did not find that they describe the board's role or engagement on such matters in a similar way. We also found on a number of occasions that specific milestones or dates forming part of processes that occur in multiple steps throughout the year were not always commonly or clearly understood. We found a need for providing greater clarity in defining specific responsibilities in long-range planning steps, board candidate replacement, and PHI executive and management performance review and compensation.

11. The PHI LLC board should receive regular updates regarding Exelon's operations and financial condition, and should regularly examine Exelon financial distress scenarios. *(See Recommendation #5)*

The merger commitments make clear that a central responsibility of the independent directors is to provide critical consents precedent to actions that can have material financial consequence for PHI LLC and its entities, including ACE. The members all have a material level of financial understanding. However, the financial structures, agreements, relationships, and consequences likely to be in issue in times of financial distress may prove very complex. Moreover, they will necessarily involve entities above and outside PHI LLC.

The orientation materials provided to the directors do not explain the Exelon financial structure as it may affect PHI LLC, should it come under duress. The independent directors have not, either themselves, or with the management directors (who include top Exelon executives) addressed potential scenarios, how to distinguish Exelon from PHI LLC (and subsidiary) interests, what perspective(s) they need to apply in making decisions, or how and in what time sequence a potentially rapid and complex set of conditions requiring response may arise.

D. Recommendations - - Boards of Directors

1. Expand the numbers of Exelon and PHI LLC board meetings and include regular sessions bringing both together. *(See Conclusions #4 and #8)*

The addition of two Exelon meetings would bring it into closer conformity with industry experience and it would provide an opportunity for driving the strategic move toward utility growth, uncertainties, opportunities, and risks, and would allow for deeper examination of utility investment levels. For an enterprise with vast operations beyond those of its utility companies, we see benefit in enhancing board attention to ensuring that redirection of resources remains consistent with utility needs overall and with specific focus on each of the operations involved - - including ACE. Increased meetings would also provide more opportunities for taking oversight of PHI utility matters closer to that existing when PHI had a larger and more broadly experienced board.

Similarly, the PHI LLC board should be meeting at least six times per year as well, particularly given the matters addressed in the following recommendation, and in light of what we perceive as a need to ensure that general engagement and discussion translates into clearer decision and information points along the way as multi-stage processes (like long-range planning and executive and management performance, and compensation) progress through the year.

Increased meeting frequency would also permit increased direct interaction between the boards. To the extent that the PHI LLC board has been constituted to provide particular insights and perspectives, an opportunity to share them directly with parent board members would prove beneficial. One of the benefits in more Exelon board meetings is to permit deeper dives into PHI-level matters. Periodic joint meetings between the boards would advance that goal.

Exelon Utilities performs a wide range of performance measurement and analytical activities addressing performance at the operating utilities. Moreover, under a recent strategic reorganization, Exelon Utilities will be embarking on new activities to examine strategic grid and customer plans, identify investments that will support strategic objectives, develop a policy framework supportive of those investments, and support the evolution of the Exelon business model to support changed strategic focus. At the Exelon level, a multi-year, EBSCo "Transformation Initiative" is underway to improve over a five-year implementation period the service company's efficiency, lower its cost structure, and adopt a "sustainable cost management and accountability framework."

The PHI LLC board members expressed that their role extends beyond service as a "separate" voice in time of financial distress. If they are to play a material role in the challenges and opportunities facing the PHI sector of Exelon engagement in areas like these will be important at a transformative time. Greater interaction with the Exelon board and with the executives of Exelon Utilities will be necessary.

2. **PHI LLC board membership of seven, with representation from the four jurisdictions involved needs to remain a central element of the governance structure.** *(See Conclusion #6)*

The current governance structure calls for PHI LLC board membership of at least seven, with at least four independent members, one from each of the four PHI utility jurisdictions. Retaining that number, and that independent membership distribution, is essential to ensuring appropriate ring-fencing. It is also important in ensuring attention to New Jersey needs and circumstances. The governance documentation surrounding PHI LLC board membership should incorporate these limits.

3. **Make clear that new PHI LLC independent directors shall be subject to restriction on economic interests beyond those nominally compliant with exchange listing-requirements.** *(See Conclusion #9)*

The current directors will eventually require replacement. Their successors and families should have no economic interest that would have the appearance of affecting their ability to exercise the votes that require independent director support or consent in Exelon or any of its entities.

4. Document more clearly the role of the PHI LLC board with respect to oversight activities. *(See Conclusion #10)*

The board members did not express uniformity in discussing roles with respect to typical board activities; *e.g.*, long-range planning, candidate replacement identification, self-assessment of its performance, or contribution to PHI-entity executive compensation. Greater clarity should exist in what specific approvals are required of the board and at what junctures. If there exists a range of areas where informing them is just for the purpose of keeping them informed, that should be made more clear.

5. Provide the PHI LLC board should receive regular updates regarding Exelon's operations and financial condition, and regularly examine Exelon financial distress scenarios. *(See Conclusion #11)*

Key votes that require independent director support or consent on matters arising in times of financial times of distress are likely to require quick action under intense pressure. The PHI LLC board should receive at least semi-annual presentations addressing Exelon's financial performance, condition, and risks. Periodically, the board should also be presented with a test-scenario designed to help it to develop a robust perspective from which to respond to a variety of conditions that may put its special voting or consent powers and obligations into play. These exercises should focus on ensuring how the interests of PHI LLC and its subsidiaries may differ from those of the rest of Exelon, what other players (*e.g.*, creditors or bankruptcy courts) may be acting in their own forums and managers, and what resources may be required to be marshalled to assist the board in its deliberations in such circumstances.

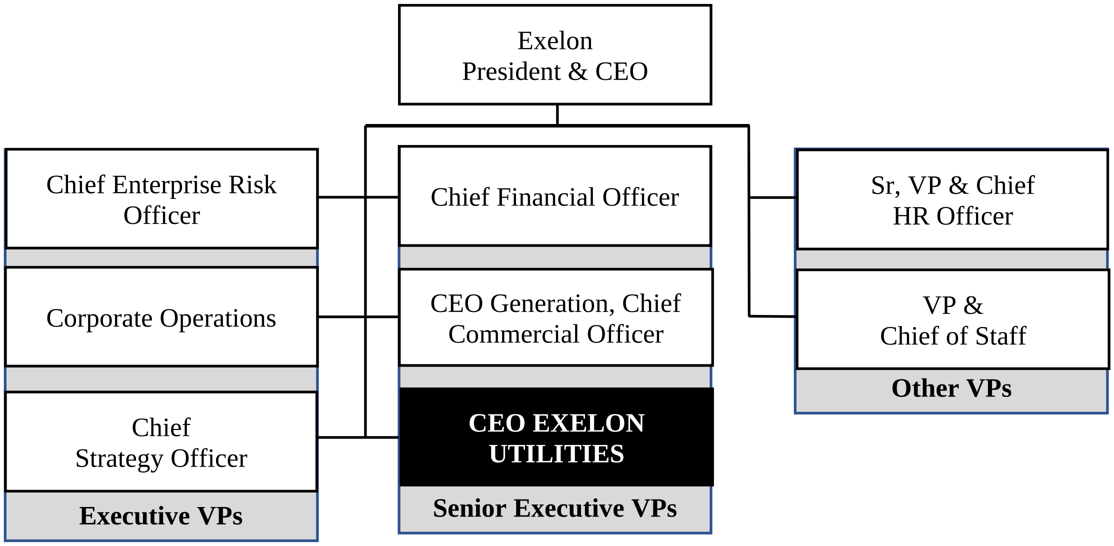
E. Findings - - Top Management's Focus and Support

Both the Exelon and PHI LLC level executive organizations provide material support to utility operations generally and to the PHI utilities specifically.

1. Exelon-Level-Executive Organization

Exelon operates under a team of 22 senior executives, directed overall by a President and CEO (Parent CEO). The next diagram illustrates the top-level parent executive organization.

Top-Level Exelon Executive Organization Structure



The Exelon executive structure employs three basic components, each of which has a different focus:

- Utility operations
- Generation and competitive market operations
- Traditional corporate and support functions.

Overall direction of utility operations falls under the CEO, Exelon Utilities. Individual lead officers direct a similarly, but not identically defined set of operating responsibilities for each of the Exelon operating utilities. Those responsibilities for the PHI utilities, including ACE, remain combined under a single lead officer, continuing the pre-merger approach. The PHI LLC lead officer has responsibility for overall Pepco Holdings performance in reliability, customer satisfaction, financial management, and regulatory and external affairs. The lead utility operating company officers are:

- PHI LLC President and CEO
- PECO President
- BGE CEO
- ComEd President and CEO.

An entirely different group of senior officers carry out Exelon's very extensive generation and competitive market (competitive retail and commodities) opportunities. This leadership group operates under the Exelon Generation President and CEO, who also carries the title of Exelon's Senior Executive Vice President, Chief Commercial Officer. His reports include:

- CEO of Constellation - - an Executive Vice President responsible for competitive retail and wholesale businesses offerings of electricity, natural gas and other energy-related products and services to customers and ensuring optimization of Exelon Generation's fleet
- Exelon Generation President and CEO, who has responsibility for Exelon's generating fleet, with the following reports:

- Executive Vice President and Chief Operating Officer, Exelon Generation (and an Exelon Executive Vice President), to whom report a Senior Vice President and Chief Nuclear Officer for the nuclear generation fleet, and a Senior Vice President, Generation and President, Exelon Power for the other generating facilities.
- Senior Vice President, Generation and President and Chief Nuclear Officer, Exelon Nuclear - - nuclear generation fleet

The corporate and support sector of the top-level Exelon executive structure include the following officers:

- Chief Financial Officer - - a Senior Executive Vice President responsible for all financial activities including capital investment process, cost optimization, financial reporting, planning, investor relations, audit, and taxes, with the following officers under him:
  - Investor Relations Senior Vice President - - investor relations strategies, activities, and communications with and reporting to the financial community
  - Audit and Controls Senior Vice President - - execution audit and controls strategies and activities
- Chief Strategy Officer - - a Senior Executive Vice President responsible for corporate development and strategy, legal, regulatory, government affairs, investments and communications, with the following officers under him:
  - Government and Regulatory Affairs and Public Policy Executive Vice President - - development and implementation of federal, state, regional government, regulatory and public policy strategies
  - General Counsel and Senior Vice President - - legal and corporate governance
  - Corporate Affairs, Philanthropy and Customer Engagement Senior Vice President - - communications, branding, and customer engagement, and corporate giving
- Chief Enterprise Risk Officer - - an Executive Vice President responsible for enterprise-wide risk management
- Corporate Operations Executive Vice President - - information and technology, security; real estate and facilities; supply operations and sourcing for the Exelon operating utilities
- Chief Information and Digital Officer - - a Senior Vice President responsible for information technology and digital strategy, resources, and innovation
- Chief Human Resources Officer - - a Senior Vice President responsible for development, implementation, direction, and evaluation of HR functions including compensation, benefits, employee relations, diversity & inclusion, talent management, recruiting and organizational effectiveness.

At the time of its combination with PHI, Exelon operated under three principal arms:

- Exelon Energy Delivery
- Exelon Generation
- A variety of other non-utility businesses.

Exelon Energy Delivery housed Exelon's electricity and natural gas utility operations, divided among:

- RF Holdco LLC, which holds Baltimore Gas & Electric (BG&E) and two other subsidiaries that deal with BG&E financial instruments
- PECO Energy Company, which holds PECO and a number of operating and financial subsidiaries
- Commonwealth Edison Company, which holds the Illinois and Indiana Commonwealth Edison utilities, and a financing and a transmission-line development company.

Exelon Energy Delivery houses the PHI LLC entities (including ACE) under PH Holdco, LLC, a Delaware company.

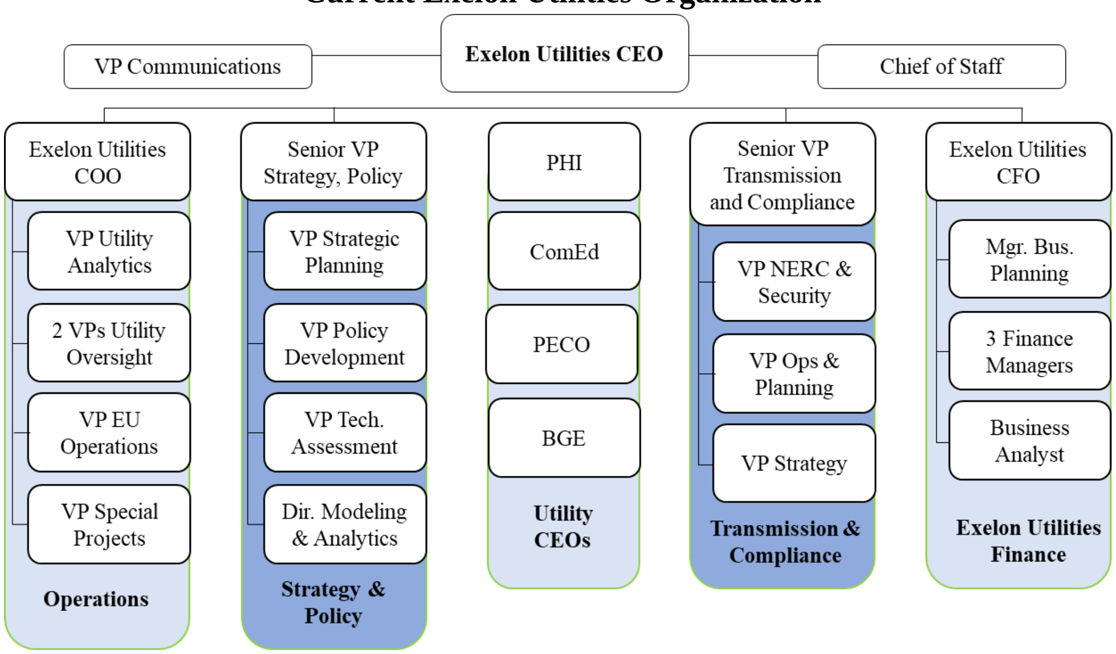
Exelon Generation holds a wide variety of generation and energy services businesses, divided among:

- A wide variety of generating units, generally organized corporately by individual project, and each held by Exelon Generation
- A group of entities under Constellation Power, consisting primarily of solar projects also organized corporately by individual project.

2. Exelon Utilities Organization

The next chart depicts the current organization of Exelon Utilities.

Current Exelon Utilities Organization



The September 2018 reorganization creating this Exelon Utilities organization reflects a directional change following integration of the PHI and BG&E utility organizations of recent years, and looks to longer-term, strategic utility direction, "focused on transforming our business model to maximize value for our customers and support the goals of our communities with an eye toward future growth."

The five major groups, Operations, Utility CEOs, Transmission & Compliance, Finance, and Strategy & Policy groupings existed before, but the September 2018 changes redesign the Strategy and Policy group to give it a long-term planning focus. Exelon has made a fundamental shift in growth focus, from generation and market activities to its utilities. The Strategy & Planning and Finance groups undergo the most significant change under this restructuring - - both of them oriented toward the focus on the utilities as Exelon's major growth engine. The Strategy & Policy group's design focuses on support for addressing grid design, customer service model design, and supportive public policies. The Exelon Utilities Finance group will:

- Link 5 and 10-12 year strategic plans with financial and business plans
- Work closely with the utility CFOs in managing "… business planning and financial outcomes including budgets, earnings, rate impacts and rate cases."

The Operations group under the COO continues to govern operating performance, continuing the Peer Group process, focusing on analytics, and addressing examinations, initiatives, opportunities, and issues as needed on an ongoing basis. The new Exelon Utilities CEO also expects it to play a role in large, multi-utility projects important to positioning Exelon's utilities to meet future developments and needs. As it has in the past, Transmission & Compliance has responsibility for strategy, planning and operational governance of transmission assets, including NERC and FERC compliance. This group also has responsibility for electric and gas utility facilities and office buildings.

3. *Exelon's "Management Model"*

Exelon employs across its operating entities a management model that focuses on objective performance measurement across a wide range of operational metrics (Key Performance Indicators, or "KPIs"). Regular performance measurements against measurable targets support monthly reporting, trending of each entity's performance, comparison of performance among them, and management meetings to address performance trends, variances, and areas meriting attention and action. A highly structured Peer Group process brings together operating company personnel under the direction of Exelon Utilities' executive management to identify and pursue changes designed to improve efficiency and effectiveness.

a. <u>The "Peer Group Process"</u>

Exelon has brought to PHI LLC participation in a comprehensive, formally structured internal, best-practices process. The Exelon internal Peer Group process operates under governance, oversight, and support from a dedicated organization at the Exelon level. The focus is on implementing best practices, on standardizing business equipment and systems, processes, metrics, and controlled documents, such as operating procedures, and on promoting knowledge transfer among the Exelon utilities.

It operates within a framework that seeks to move Exelon's utility operating companies into first-quartile operational and top-decile safety performance, while meeting financial goals. Its objective is to establish key roles, management controls, and standards that drive best practice sharing and implementation across all Exelon Utilities, in support of achieving and maintaining top quartile performance.

Two vice presidents, each reporting to the CEO of Exelon Utilities, have responsibility for the customer and infrastructure groupings of "Core Functions" into which Exelon has divided the Peer Group process.

A Vice President and Chief Customer Officer oversees customer-focused Peer Groups established to address each of:

- *Billing & Payment Processing*
- *Credit and Collections*
- *Customer Care*
- *Customer Experience*
- *Customer Solutions*
- *Meter Services*

A Vice President and Chief Infrastructure Officer oversees the remainder of the peer groups, which address the following subjects:

- *Capacity Expansion*
- *Contracting Strategy*
- *Corrective Maintenance*
- *Facility Relocation*
- *Fleet Management*
- *Human Performance*
- *Innovation*
- *Liability and Claims*
- *New Business*
- *Operate and Restore*
- *Preventive Maintenance*
- *System Performance*
- *Real Estate*
- *Safety*
- *Training*
- *Configuration Control*
- *Environmental*
- *Work Management*
- *Productivity & Effectiveness*
- *Emergency Preparedness*
- *Business Continuity*

Each Peer Group consists of an Exelon Utilities level Corporate Functional Area Managers (CFAMs) and of a Utility Functional Area Manager (UFAM) from each of the utilities. The groups under the two vice presidents employ CFAMs on loan from the Exelon utilities - - four to cover the six customer groups and six to cover the 20 infrastructure groups. One of the CFAMs comes from PHI LLC.

The peer groups undertake a broad and extensive array of initiatives, which focus on a variety of opportunities to improve efficiency, standardization, service quality and reliability. The impressive range of initiatives addresses opportunities for improving customer service, customer program accessibility, IT and other system convergence, innovative technology use, forecasting and planning, capacity expansion, metering, environmental, maintenance, contracting, design, emergency preparedness, outage causation, service restoration, work management, productivity, training, fleet, safety, research and development, claims, and new business. The customer program for 2018 includes some 20 separate initiatives and the infrastructure program 130.

b. KPIs

We discuss below in sub-section 6.f the more than 60 KPIs regularly measured. They cover the following general areas:

- Organizational Effectiveness
- Operational Excellence
- Customer Service

- Compliance
- IT
- Customer & Stakeholders Satisfaction
- NERC
- Financial Discipline.

Monthly reports address each KPI (again as discussed below in sub-section 6.f). They chart the following:

- *Executive Responsible*
- *Quantitative Goal*
- *YTD Performance vs. Goal*
- *Performance (values and chart)*
- *Projected Year-End Performance*
- *Projected Year-End Variance*
- *Discussion of variances*
- *Means for addressing variances*
- *Segregation of performance by each PHI operating utility.*

4. *The Exelon CEO's Executive Committee*

PHI LLC leadership has representation on an Exelon Executive Committee. This committee exists to advise Exelon's CEO on issues affecting Exelon as a whole, on resource allocation among business areas, and on strategies at the corporate, business-unit and functional group levels. The committee exists to address issues having or raising:

- Multi-unit or Exelon-wide effects
- Potential for establishing regulatory or other precedents
- Longer-term impacts
- Significant operating or financial impacts
- Novel policy or stakeholder considerations.

The committee also addresses a number of related, but specifically identified issues:

- Long range plans and budgets
- Significant strategic, financial, regulatory or operational issues
- Significant corporate policy proposals
- Annual corporate-level environmental and safety assessments
- Assessment of corporate diversity and inclusion performance
- Key compliance issues
- Key human resource strategies and projects.

The Executive Committee has broad Exelon-level executive membership:

- CEO
- Exelon Utilities Senior Executive Vice President & CEO
- Exelon's Senior Executive Vice President & Chief Strategy Officer
- Senior Executive Vice President and Chief Commercial Officer, President and Chief Executive Officer, Exelon Generation
- Senior Executive Vice President and CFO
- Executive Vice President and Chief Enterprise Risk Officer

- Executive Vice President, Corporate Operations
- Executive Vice President, Government & Regulatory Affairs and Public Policy
- Senior Vice President & General Counsel
- Senior Vice President, Corporate Affairs, Philanthropy, and Customer Engagement
- Senior Vice President & Chief Human Resource Officer
- Senior Vice President & Chief Information Officer & Chief Digital Officer
- Senior Vice President, Investor Relations
- Senior Vice President, Audit & Controls.

The committee's members also include the CEOs of all Exelon business units:

- PHI LLC CEO
- Executive Vice President & CEO of Constellation
- Executive Vice President and COO of Exelon Generation
- BG&E CEO
- ComEd CEO.

5. PHI and ACE Management Empowerment

We examined the levels of authority and control ("independence") that Exelon leaves at the PHI executive level and in turn the degree to which PHI does the same for ACE.

a. Resources and Organization Changes

Chapter VIII addresses merger commitments, which address minimum PHI LLC separateness requirements and Chapter XI addressing staffing discusses the consolidation of corporate and service functions at the EBSCo level, moving a number of personnel and activities from PHISCo. From a direct operational perspective, Exelon has left operational and customer-service organizations under PHI-level management. PHI managed them on a consolidated (ACE, Pepco, Delmarva) basis before the merger, and continues to do so now.

ACE Field resources (dedicated to ACE) operate under the overall direction of PHISCo, led by PHI's Chief Operating Officer. These ACE personnel number about 390, including 7 contracted resources. Other PHISCo-managed ***PHISCo Technical*** organizations and personnel provide the range of technical services needed to produce and operate effective network infrastructure. Examples of these technical services include network planning, budgeting, design, engineering, project management, construction management, construction, asset management, inspection, maintenance, contractor management, and operations. PHI-wide, these PHISCo technical resources number over 1,400, including some 250 contracted personnel. ***PHISCO Customer Operations*** personnel number about 630, including 3 contracted resources.

PHISCo Corporate and Support resources include the office of the PHI CEO and the groups providing government and external affairs, regulatory affairs, and a variety of support services. Their combined staffing of about 470 includes about 20 contracted resources. The 255 EBSCo ***Embedded at PHISCo*** personnel (including about 10 contracted positions) serve in functions essentially moved from PHI to the EBSCo level - - controller, communications, finance, human resources, legal, and supply chain. The next table summarizes employee headcounts and changes in them in recent years. The changes in structure and location following the merger make one-to-one resource comparisons at the functional level impracticable.

Management does not account for resources functioning in the other two ways that involved ACE (***Exelon-Wide EBSCo*** and ***Exelon Utilities EBSCo***) as part of PHI headcount. They "hit the books" of PHI and in turn ACE as costs, described more fully in Chapter IV. We discuss them below. The next table summarizes the changes in internal staffing dedicated fully to PHI operations; *i.e.*, excluding these two Exelon categories, but including ***EBSCO Embedded at PHISCo*** personnel. It also excludes approximately 280 Information Technology personnel moved entirely from PHI to EBSCo in 2018 (*i.e.*, no longer embedded at PHISCo). The approved level of resources has not changed since 2016, remaining at a total of 4,501. The headcount and complement process started in December 2016.

The next table shows that the PHISCo-managed field resources dedicated to ACE and the PHISCo Technical and Customer Service personnel levels have remained the same or grown following the merger.

Changes in PHI-Dedicated Staffing

Work Group	2016	2017	2018	2016v2018 #	2016v2018 %
Elecric & Gas Operations					
COO Office	3	2	2	(1)	-33.3%
Operations Office	8	3	5	(3)	-37.5%
ACE Electric Operations	**325**	**380**	**383**	58	17.8%
Delmarva Electric Ops	429	470	458	29	6.8%
Pepco Electric Ops	687	716	681	(6)	-0.9%
Control Center Ops	174	181	182	8	4.6%
Gas Operations	149	164	157	8	5.4%
Subtotal	*1,775*	*1,916*	*1,868*	*93*	5.2%
PHISCo Technical Services					
Transmission & Substation	631	691	676	45	7.1%
Technical Services	221	247	239	18	8.1%
Project & Contract Mgmt.	64	77	72	8	12.5%
Subtotal	*916*	*1,015*	*987*	71	7.8%
Customer Operations					
Subtotal	*680*	*657*	*628*	(52)	-7.6%
Corporate Support from PHISCo					
CEO Office	9	8	8	(1)	-11.1%
Gov. & Ext Affairs	109	98	90	(19)	-17.4%
Regulatory Affairs	106	104	97	(9)	-8.5%
Support Services	262	271	261	(1)	-0.4%
Utility of the Future	0	4	12	12	***
Subtotal	*486*	*485*	*468*	(18)	-3.7%
PHI Total Internal	***3,857***	***4,073***	***3,951***	***94***	**2.4%**
Corporate Support from EBSCo Embedded at PHI					
Controller	58	60	46	(12)	-20.7%
Corp. Communications	13	16	16	3	23.1%
Finance	52	44	43	(9)	-17.3%
Human Resources Ops	53	40	24	(29)	-54.7%
Legal	20	19	20	0	0.0%
Supply Chain	113	109	106	(7)	-6.2%
Embedded Subtotal	*309*	*288*	*255*	(54)	-17.5%
Total PHI - Pre IT	**4,166**	**4,361**	**4,206**	**40**	1%
Information Technology[1]	285	257	***257***	(28)	-9.8%
PHI Total Post-IT	**4,451**	**4,618**	**4,463**	12	0.3%
Augments and Other[2]	N/A	391	494		
Total with Augments	***4,451***	***5,009***	***4,957***		
Change from Prior Year	***(293)***	***556***	***(52)***		

[1]2018 Assumes 2017 IT Levels

[2]Other Added to Conform Totals DR Responses

Management projects reductions in PHI resource levels through 2019. The chart below shows stability in operations personnel, with reductions totaling five percent expected in functions transferred to EBSCo.

Forecasted Changes in PHI Personnel

Functions	2017	2018	2019	Change %	Change #
Operations	3,859	3,907	3,898	1.0%	39
Government and Regulatory	202	202	202	0.0%	0
Executive	12	11	11	-8.3%	-1
Controller	60	47	46	-23.3%	-14
Corporate Communications	16	20	20	25.0%	4
Finance	44	45	41	-6.8%	-3
Human Resources	40	22	22	-45.0%	-18
Information Technology	257	0	0	-100.0%	-257
Legal	19	20	20	5.3%	1
Supply Chain	109	106	106	-2.8%	-3
Total PHI	**4,618**	**4,380**	**4,366**	**-5.5%**	**-252**

ACE and the other PHI utilities had separate presidents before the merger and into 2018. PHI has recently eliminated the separate ACE position, combining it with the similar position from Delmarva and selecting the Delmarva incumbent to fill that role. The ACE president served primarily in the role of managing relations with local and state community groups, governmental bodies, elected officials, and other stakeholders. The position operated with a small staff and did not directly manage operational or customer service activities. However, the now-former president described the role as including the transfer of customer concerns, issues, and other input on such matters to the PHISCo personnel who do have responsibility for managing New Jersey infrastructure and customer operations.

b. Formal Delegations of Authority from Exelon

Permitting PHI LLC to make commitments in support of utility operations without excessive requirements for Exelon-level approvals comprises an important element of retaining operational control of those operations with PHI LLC and its board. Exelon has provided for a clear empowerment of and limitations on the power of PHI LLC executives to make delegation of authority to create financial commitments without higher-level Exelon approval. The Exelon Corporation Delegation of Authority Policy sets limits for each subsidiary, including PHI LLC. The next illustration shows the limits applicable to PHI. The next table compares amounts delegated to PHI LLC with those of PECO and BGE. However, an extensive series of exceptions requiring Exelon-level reviews and approvals substantially limit PHI LLC's discretion to act without Exelon-level review (sometimes by officers, such as the PHI LLC CFO, nominally reporting through PHI LLC's CEO, but also working under direction from the Exelon-level financial organization).

PHI

PHI or Utility Board of Directors	President & CEO, PHI or Utility
> $50M	≤ $25M
> $5M	≤ $5M
> $10M	≤ $10M
> $10M	≤ $10M
> $10M	≤ $10M
> $100M	≤ $100M
> $50M	≤ $25M
> $50M	≤ $25M
> $50M	≤ $25M
ALL	
≤ $100M	
ALL	
ALL	
> $50M	≤ $25M
> $50M	≤ $25M
≥ $1M	< $50K

PECO

PECO Board of Directors	Chief Executive Officer, Exelon Utilities	Chief Executive Officer, PECO
> $50M	≤ $50M	≤ $25M
> $50M	≤ $50M	≤ $25M
> $50M	≤ $50M	≤ $25M
> $50M	≤ $50M	≤ $25M
> $5M		≤ $5M
> $10M		≤ $10M
> $10M		≤ $10M
> $10M		≤ $10M
> $100M		≤ $100M
> $50M	≤ $50M	≤ $25M
> $50M	≤ $50M	≤ $25M
> $50M	≤ $50M	≤ $25M
ALL		
≤ $100M	≤ $50M	
		ALL
ALL		
ALL		
> $50M	≤ $50M	≤ $25M
> $50M	≤ $50M	≤ $25M
≥ $1M	< $1M	< $50K

BGE

BGE Board of Directors	Exelon President & CEO	Chief Executive Officer, Exelon Utilities	Chief Executive Officer, BGE
> $50M	≤ $100M	≤ $50M	≤ $25M
> $50M	≤ $100M	≤ $50M	≤ $25M
> $50M	≤ $100M	≤ $50M	≤ $25M
> $50M	≤ $100M	≤ $50M	≤ $25M
> $5M	≤ $100M		≤ $5M
> $10M			≤ $10M
> $10M	≤ $100M		≤ $10M
> $10M			≤ $10M
> $100M			≤ $100M
> $50M		≤ $50M	≤ $25M
> $50M	≤ $150M	≤ $50M	≤ $25M
> $50M	≤ $100M	≤ $50M	≤ $25M
ALL	≤ $200M		
≤ $100M	≤ $100M	≤ $50M	
ALL	≤ $50M		
ALL			
> $50M	≤ $75M	≤ $50M	≤ $25M
> $50M	≤ $100M	≤ $50M	≤ $25M
≥ $1M	≤ $1M	< $1M	< $50K

c. PHI LLC Review of EBSC Costs and Performance

PHISCo management reviews with EBSC proposed services each year. Following agreement between them, annual Service Level Agreements outline the services to be provided. ACE, like the other PHI utilities, execute these annual agreements. EBSC's Chief Financial Officer has responsibility for developing the service company's budget. EBSC embeds many of the personnel providing services within the corresponding PHI-level functions (*e.g.*, human resources, supply, finance). This approach provides for the ability to dedicate resources to PHI entities, while promoting Exelon-wide coordination through common systems and practices, performance quality measurement, and information and best-practices sharing.

In addition to the monitoring of budget performance for services provided to each operating utility, EBSC also measures its overall cost performance against budget, and ties incentive compensation of its management to performance against budgets at the EBSC level.

6. *PHI Executive Management Focus*

a. Regular Reports

The PHI LLC CEO receives a daily "Flash Report" that provides measurements and corresponding cost, operation, and service quality metrics covering a number of PHI-wide factors. These factors include transmission system operation, distribution system operation, customer service performance, weather, and a summary of significant system events. The PHI LLC CEO and COO, along with a broad range of officers and managers, also participate in 8am PHI LLC Daily Leadership Calls. These calls open to a very wide PHI audience, run according to a structured agenda providing slots for reports on each PHI LLC operating utility company's:

- Overall conditions
- Safety
- Weather
- System operating status
- Previous day's CAIDI and SAIFI, with reasons for variances
- Number of customers out of power
- Planned outages
- Causes of significant outages
- Excavation damages
- Status of any pending action items
- Project and construction management reports
- Exception-base reporting (as required) in the areas of technical services, IT, supply, emergency preparedness, government affairs, and media.

The PHI LLC CEO also participates in a daily ACE-level operations call that precedes the PHI-level counterpart.

Other regular reports to the PHI LLC CEO and COO addressing matters affecting ACE include:

- Daily Reliability Scorecard - - shows year-to-date SAIFI, CAIDI, and Customer Interruptions, broken down by source (distribution, transmission and substations, and vegetation management), by PHI LLC utility, and measured against internal objectives and regulatory standards
- Monthly Risk Committee Report - - addresses recent risk-posing events, summarizes current risk levels using a "heat map", and contains detailed descriptions of proposed capital projects requiring authorizations (see Chapter V for a description of capital project planning and authorization)
- Monthly Preliminary O&M & Capital Review - - provides detailed data generally for the current month, year-to-date, and versus budget:

    - 36-category listing of O&M expense with a brief explanation of variances
    - 30-category listing of for capital expenditures with a brief explanation of variances
    - 17-category breakdown full-time-equivalent employees across PHI, broken down by management and bargaining unit
    - 6-category breakdown of percentages of labor charged to capital and to O&M
    - 6-category breakdown of dollars spent on overtime
    - Detailed breakdown (50 or so categories) of spending for the PHI-level Customer Operations, Operations, Technical Services, Project Management, Support Services, and Transmission and Substations groups
    - Breakdown of PHI-wide spending by 27 work categories
    - 13-category bad-debt breakdown
- PHI Capital and O&M Forecast Meeting report - - provides charts of planned versus actual O&M and capital expenditures, details sources of largest variances, and describes reasons for large variances
- Quarterly Exelon Utilities Audit and Control Update - - summarizes overall status of controls, looks ahead to upcoming activities, summarizes key risk themes and insights, recaps recent audit findings, and reviews SOX program status
- Semi-Annual ACE Regional Update - - supports the twice-yearly operations regional meeting, and includes;
    - Multi-year chart of SAIDI and CAIDI performance (ACE overall and the four regions of Cape May, Glassboro, Pleasantville, and Winslow)
    - Breakdown of outages by cause
    - Update on measures to address performance issues (*e.g.*, customers experiencing multiple outages, motor vehicle incidents)
    - Description of new challenges (*e.g.*, exhaustion of trimming budget, reduction in reliability enhancement budget)
    - Cost status on approved reliability projects
    - Summary of outages by cause
    - Capital budget summary
    - Progress of major projects
    - ACE engineering group highlights
    - Operations Control Center staffing, highlights, challenges, and initiatives
    - Implementation of Exelon's Contractor of Choice process
    - Contractor budgets and spending by work category
    - Details of quarterly distribution-line work plan
    - Supply Operations work plan
    - Customer Care Center performance statistics against key metrics, challenges, and initiatives
    - Field Training update on safety and training provided

    - Fleet Services report on Peer Group initiatives, successes, challenges, and performance against KPIs
    - Report on field safety performance
- Monthly Union Hiring report - - addresses hirings required to be made by the end of March 2018 by merger commitments in each of the jurisdictions where PHI LLC's distribution utilities operate
- Weekly Regulatory Update - - addressing ongoing regulatory proceedings and matters.

Except as the preceding list of reports addresses PHISCo costs and operations, senior PHI LLC executive management receives no reports focused on the service company's plans, resources, results, and operations.

b. Regular PHI Management Meetings

At the highest level within PHI LLC, the CEO, COO, and CFO meet to discuss monthly reports of financial results at the PHI level. These reports provide a summary of data covering income and earnings, customers and usage, and capital, operating, and regulatory asset expenditures. The reports break the numbers into detailed categories, provide budgets, and year-to-date expenditures, and variances.

A number of groups meet periodically to address defined areas of PHI management and operation. The next paragraphs describe them.

PHI LLC began the routine use of bi-weekly meetings among the CEO and his direct reports following the merger with Exelon. The meetings generally address issues and updates on matters within the responsibility of those direct reports.

c. PHI Risk Committee

A PHI Risk Committee has operated since 2014. It oversees the identification, assessment, and management of risks across all PHI LLC operations. The Committee operates under a charter that assigns it specific responsibilities:

- Ensuring implementation of Exelon's risk policies and any PHI-specific risk policies required by "regulatory mandate"
- Reviewing capital projects in accord with Exelon's Capital Approval process and Delegation of Authority Policy.
- Reviewing "Non-Standard Transactions" under Exelon's Delegation of Authority Policy
- Reviewing top PHI business risks in accord with Exelon's structured risk management framework
- Reviewing and discussing utility business strategy, risks, and opportunities
- Review commodity portfolio planning in accordance with regulatory requirements
- Reviewing and discussing topics from Exelon's board of directors Finance and Risk Committee and Exelon's management-level Corporate Risk Management Committee
- Govern the process of escalating risks to Exelon Utilities and Exelon leadership.

The committee has broad membership among PHI executives and directors, consisting of:

- The three top PHI LLC officers: the CEO, who chairs the committee, the CFO, and the COO
- PHI vice presidents for Legal & Regulatory Strategy, Governmental & External Affairs, Electric & Gas Operations, Technical Services, Customer Operations, Support Services
- Controller
- Internal Audit Director
- PHI CEO's Chief of Staff
- PHI Director of Enterprise Risk Management (as secretary to the committee).

Non-members invited to committee meetings include:

- Exelon's Chief Risk Officer
- Exelon's Vice President, Enterprise Risk Management Operations
- Exelon Utility Risk Peer Group members (the Utility Risk Executive Sponsor, CFAM, and UFAM.

The meeting frequency of the PHI Risk Committee has increased from 6 to generally 12 times per year.

d. PHI Strategy and Policy Committee

Created in January 2017, the Strategy and Policy Committee sets regulatory and legislative strategy for PHI, operating under a detailed listing of responsibilities, and meeting monthly. Its members include the following PHI officers: CEO, COO, CFO, General Counsel and vice presidents for Legal and Regulatory Strategy, Governmental and External Affairs, Regulatory Policy and Strategy, and Corporate Communications. This Committee has a PHI Regulatory and Legislative Strategy Subcommittee, also formed in January 2017. It generally meets bi-weekly. It focuses on developing corporate strategic objectives, approving execution plans, and approving addition or deletion of initiatives and issues from lists that designate them as priorities.

PHI executive management has held generally weekly PHI Executive Level Regulatory Update meetings since at least the beginning of 2014. These meetings update PHI executive management, and provide them with advice regarding ongoing legal and regulatory matters. The CEOs of PHI and Exelon Utilities also receive Bi-Monthly PHI Regulatory and Legislative Updates.

e. PHI Diversity and Inclusion Council

Formed in December 2017, the PHI Diversity and Inclusion Council succeeded a pre-merger committee. The Council's structure calls for 5 management and 25 non-management employees, expected to serve from 18 to 24 months. It will operate under overall executive sponsorship from the PHI CEO and the direct sponsorship of the CEO's Chief of Staff and of a Principal Management Development Specialist from PHI Human Resources. See Chapter X for a description of the management of Human Relations as it affects ACE, including diversity promotion and support.

Supported by quarterly meetings, the council's focus areas include workplace and supplier diversity and inclusiveness, community relationships, and diversity and inclusion leadership, seeking to provide guidance and structure to enable PHI to obtain its diversity and inclusiveness goals.

f. Exelon Utilities Monthly Review Meetings - - PHI Areas of Review

Exelon Utilities Monthly Review meetings began to include PHI LLC following the merger. These meetings provide a forum for reviewing the prior month's performance of the Exelon utilities against Key Performance Metrics. The PHI COO leads these meetings, at which a group of about 30 PHI managers review progress against a comprehensive set of metrics. For each metric, a report available at the meeting provides a PHI-level target, summarizes year-to-date performance in total and by PHI LLC operating utility, and discusses variances and corrective actions. The list below exemplifies the comprehensive nature of the metrics regularly measured and discussed:

Operational Excellence

- SAIFI - IEEE 2.5 Beta 0.99 0 – SAIFI
- All in SAIFI - IEEE D – SAIFI
- Vegetation-Related SAIFI - 2.5 Beta – SAIFI
- Bus Interruption Events – Number of Interruptions
- Distribution Bus Interruption Rate – Rate of Distribution Interruptions
- Transmission Line Interruption Rate – Rate of Transmission Line Interruptions
- CAIDI - IEEE 2.5 Beta – Minutes
- All in CAIDI - IEEE D – Minutes
- Vegetation-Related CAIDI - IEEE 2.5 Beta – Minutes
- Percent of Customers with 4 or More Interruptions – Percent
- Percent of Total Customers Interruptions $\geq$ 4 hours – Percent
- All In 12 Month Rolling CEMI7 – Percent
- Dig-in Rate - All-in Locator at Fault – Rate of Locate Errors
- Electric Underground Damages – Damages per Locate Requests
- Preventive Maintenance Items Completed – Total Completed
- Preventive Maintenance Items Overdue – Number Overdue
- Pole Inspections Completed – Number Completed
- Overdue Pole Inspections – Number Overdue
- Beyond Original Grace Period (Remaining Tasks) – Number backlogged
- Electric Corrective Maintenance Items – Number Completed
- Electric Corrective Maintenance Backlog Items – Number Backlogged
- Service Level – Percent answered within 30 seconds
- Agent Service Level – Calls per Customer
- Abandon Rate – Percent

- Average Speed of Answer – Seconds
- Calls per Customer – Agent Calls per Customer
- Busy Out Rate – Rate
- Response Time Agreement (OTD) – Percent
- Customer Channel Utilization – Percent
- Percent of Meters Read – Percent Read
- Customer Field Operations YTD Completed Work – Field Ops Work Items Completed
- Meter Corrective Maintenance – Number of Backlogged
- All-in Customer Operations Backlog – Number of Backlogged
- Percent of Delayed Bills – Percent
- Notices of Violation – Number
- Total Greenhouse Gas Net Emissions – Metric Tons Emitted
- SF_6 Emissions – Pounds of SF_6
- Preventable NRC Reportable Spills – Number
- Distribution Vegetation Management – Percent Completed
- Transmission Vegetation Management – Percent Completed
- IT Critical Systems (SAIFI) – Percent of Unplanned Outages
- IT Critical Systems Availability – Percent Available
- IT CIMS / CC&B / CRM&B Service Delivery Quality – Percent Successfully Delivered

Customer and Key Stakeholder Satisfaction

- Customer Satisfaction Index – MSI Percent Positive – Index
- Customer Satisfaction Index – MSI Mean – Index
- Index Call Center Satisfaction – Percent
- NERC Compliance Monitoring Program – Certifications
- Externally Discovered NERC/RFC Compliance Violations – Number

Financial Discipline

- Overtime – Millions of Dollars
- Tools for People – Total Service
- Uncollectible Expense – Percent of Revenue
- Accounts Receivable – Percent greater than 60 Days
- Past Due Days Sales Outstanding – Days

Organizational Best Practices

- Staffing – Actual Headcount versus budget
- Safety Best Practices – Number of Safety Best Practices Completed
- OSHA Recordable Rate – Rate of Events Experienced
- Contractor OSHA Recordable Rate – Rate of Events Experienced

- OSHA DART Rate – Rate of Cases Experienced
- OSHA Severity Rate – Rate of Lost Days Experienced
- Total Industrial Safety Accident Rate – Accident Rate
- Motor Vehicle Accident Frequency Rate – Total frequency of Accidents
- Responsible Vehicle Accident Frequency Rate – Frequency of Employee-responsible
- Accidents Human Performance Incident Rate – Rate of Incidents
- Corrective Action Program Health Indicator – Number of Overdue Corrective Actions.

g. PHI Capital Project Review Committees

Exelon employs a procedure creating a structured approval process for proposed capital projects. (Exelon Management Model control document FI-EU-2001 Authorization of Projects). Following the merger, PHI created two committees required to execute that approval process. Both meet monthly to consider projects, documenting approvals made. The first of these committees, the Project Review Committee must approve projects over $500,000. Those exceeding $5 million must then also gain approval from the second group - - the Project Authorization Review Committee. This second group can give approval of projects with costs up to $25 million.

h. The ACE President Position

State-level government affairs at ACE operated under the ACE Regional President until mid-2018. With stable staffing and little use of outside resources, costs remained below $1 million through the end of 2017. At that time, PHI eliminated the separate position, combining it with a similar role held by a counterpart at Delmarva, and making that counterpart the regional president responsible jointly for Delmarva and ACE. A direct report of the former ACE Regional President was named to a director level position, responsible solely for ACE and reporting to the new, combined regional president position.

Two State Government Affairs managers under this top-level ACE officer carry out the day-to-day functions of the ACE government affairs role. The only change since the Exelon merger is that one of the two manager positions was at the higher, Director level.

These three ACE-level personnel have responsibility for managing communications and relationships with key state and local elected and appointed officials and staff, seeking to keep these stakeholders informed of key events and initiatives, and seeking to gain support for ACE's positions. They coordinate responses to questions from and issues raised by elected or appointed officials regarding legislative operational, service performance and infrastructure construction matters. They also serve as the primary contact with government officials during events (such as weather emergencies) having a significant potential for impact on safe and reliable service provision.

F. Conclusions - - Top Management's Utility Focus and Support

12. The overall Exelon organization structure provides for separation of non-utility functions and it provides sufficient focus on utility operations at the PHI and at the ACE levels.

Exelon has separated its utility operations from its generation and power market activities by placing them under two separate, very senior officers. A senior officer reporting directly to the CEO of Exelon Utilities leads each Exelon utility operation, including PHI LLC. This approach gives each utility operation a sufficiently high level in Exelon's senior leadership structure.

A separate set of officers provides for corporate and support services provided across both the utility and the generation and market sectors. The organization of their executive leadership typifies experience in utility holding companies regarding common service provision to a broad range of entities.

13. Exelon Utilities has brought a strong performance-based approach to management of ACE as part of the PHI utilities.

Regularly measuring performance across a comprehensive set of operationally focused metrics comprises a central part of overall management of utility performance at the senior Exelon level. Regular comparisons of performance among the Exelon Utilities and the use of the Peer Group process has brought a highly structured approach to sharing best practices and promoting efficiency and effectiveness. As the newest members of the Exelon Utilities group, PHI's utilities have been a primary focus of efforts at performance enhancement. The extensive, continually measured and reported key performance indicators and the Peer Group process have provided close and actionable comparisons of ACE performance versus that of the other Exelon utilities.

At the same time, the recent reorganization of Exelon Utilities has been designed to bring a forward-looking focus on technological, policy, and regulatory structural change in the industry, while retaining the key performance measurement and peer group processes. Exelon Utilities is strictly utility focused, with an emphasis on operational effectiveness that enhances the ability of PHI top management to optimize performance.

With the PHI utilities now largely past post-merger organizational, functional, and process integration, a solid performance baseline for them now exists. Top management at Exelon Utilities and PHI now see matching resources to that baseline as a next, major step.

14. Top PHI-level leadership remains and it focuses solely on utility matters.

The PHI chief executive and operating officers both remain. Direct executive responsibility for infrastructure and customer operations remain at the PHISCo level following the merger. Resources for those functions have not diminished. Responsibility for a number of corporate and service functions has moved to the Exelon level - - however, Exelon has embedded personnel who serve PHI entities exclusively, but under overall direction from EBSCo.

PHI had already moved to eliminate much of its non-utility operations. The remainder moved to Exelon as a condition of merger approval. Thus, PHI-level executive management's focus is now totally dedicated to utility operations. The Exelon Management Model and the structure and resources at Exelon Utilities bring a number of enhancements to PHI executive management's ability to employ that utility focus more effectively:

- Comprehensive, continually measured key performance indicators

- Regular monthly, broadly-attended meetings focusing on performance against tangible targets set for each of those indicators
- The Peer Group process and its use of well-defined projects to enhance performance across the Exelon group of utilities, and, given its recent addition, at the PHI utilities specifically
- The analytical focus that the Exelon Utilities executive structure brings to overseeing performance at all its operating utilities
- Exelon Utilities' structured focus on how industry trends and developments will affect the network, customer alternatives, regulatory constructs, and operating challenges and opportunities.

The current Chief Operating Officer at the PHI-level has extensive experience in operations at Exelon and the CEO has been at PHI for a long time. This combination brings both continuity and familiarity with Exelon values, emphases, approaches, expectations, and methods to leadership at PHI.

15. The combination of the ACE and Delmarva President positions reduces a New Jersey focus that has substantial value for ACE customers and stakeholders. *(See Recommendation #6)*

Top management has recently combined the top executive positions within ACE and Delmarva, giving the combined position to the Delmarva incumbent. Both before and after the merger, PHI operates largely on a consolidated basis. Separate operational groups dedicated to each jurisdiction exist, but PHISCo (under the COO) directs them overall. Moreover, the technical services on which those operational groups rely operate on a consolidated basis (albeit with resources primarily or solely dedicated to supporting one of the three PHI utilities where deemed effective). We found such operation effective, but it does mean multiple perspectives and the need to combine them into an integrated whole by executive leadership in all cases, by management in very many cases, and by supervisors and individual contributors in a significant number. We conducted interviews with PHI executive leadership, with the former ACE President's organization, and with PHISCo service function personnel (*e.g.*, regulatory, communications, government affairs). These interviews identified the ACE President as an important source of information from and communication and relationship development and maintenance with a wide variety of stakeholders - - customers, community and business leaders, local and state officials, service providers, thought leaders, and influencers.

ACE dedicated resources remain after the consolidation, making the resulting cost savings small. We found much more significant the loss of the visibility and emphasis an ACE-dedicated executive can bring to efforts to stay in touch with in-region interests - - receiving from and providing to them information and insights that will serve those with PHI-wide responsibilities in maintaining a robust awareness of local ACE matters.

G. Recommendations - - Top Management's Utility Focus and Support

6. Restore the ACE-only President position. *(See Conclusion #15)*

The individual selected should combine significant levels of operational and regulatory/community experience. This ACE President should:

- Report to the PHI CEO
- Act as a regular, active participant in the monthly COO meetings addressing performance
- Attend and make a presentation at each PHI LLC board meeting on "what's happening" on the ground in New Jersey
- Prepare at least monthly reports for executive management at PHI LLC, PHISCo leadership, and Exelon Utilities leadership
- Working in close coordination with regulatory affairs, become and remain a credible, reliable, knowledgeable source of information about ACE operations and customer service details of interest or concern to the BPU.

PHISCo management should conduct a program that establishes and regularly reinforces the ACE President as:

- An authoritative source of information about events in the ACE region
- The face of ACE in promoting strong, candid relationships with local interests
- An accurate source of information about ACE operations and activities with local impact
- A trustworthy source for communicating issues, concerns, needs, and initiatives along to those who can get them addressed.

H. Findings - - Internal Controls, Compliance, and Ethics

The other chapters of this report address arms'-length interaction, and compliance with affiliate and fair competition standards between directors and management, and among management. Those chapters provide a variety of recommended changes that address affiliate relationships and transactions, fair participation in markets, and optimizing ACE's costs. While important, none of those recommendations give reason to question overall integrity, fair dealing, manipulation, or disregard for the interests of ACE.

1. The Exelon Board Audit Committee

All Audit Committee members must be independent directors and they cannot serve on the audit committees of more than three other public companies. The Audit Committee of the Exelon board reviews financial reporting, accounting, internal control functions, risk management policy, compliance with the company's business conduct code and the Code of Business Conduct, and legal compliance. The committee has sole responsibility for selection, retention, and compensation of the independent accountants.

It can retain outside expertise at its sole discretion. The committee also approves the scopes of independent and internal audits and it must pre-approve non-audit services of the independent accountants for an Exelon entity. The committee must consider rebidding independent accountant services at least every five years and it must consider changing independent accountants at least every 10 years.

2. Internal Audit Structure and Resources

Prior to the merger with Exelon, the PHI Internal Audit Group operated under the direction of a Chief Audit Executive, under whom two managers directed a staff of 13 auditors. Exelon has been transitioning the function to EBSCo since the merger, completing the transition in 2018. The function now resides under the Exelon-level Internal Audit and Controls group. The group reports to the Senior Vice President and Chief Audit Executive, whose resources operate Exelon-wide, principally from offices in the Chicago, Baltimore, Washington D.C and Delaware areas. Four directors report to the Chief Audit Executive. The next chart shows charges to PHISCo for internal audit, both before and since the merger. It demonstrates that, measured on a cost basis, a roughly similar level of effort involving PHI LLC remains, after restatements to account for changes in the budget centers to which work has been assigned over these years.

PHI Internal Audit Costs

(all amounts above the "Total Costs" line are confidential)

Cost Category	2014A	2015A	2016A	2017A	2018B
Direct Costs and Salary Loaders					*Transferred to EBSCo*
Compensation[1]	[redacted]	[redacted]	[redacted]	[redacted]	
Contractors	[redacted]	[redacted]	[redacted]	[redacted]	
Travel, Training and Meals	[redacted]	[redacted]	[redacted]	[redacted]	
Materials, Equipment, Other	[redacted]	[redacted]	[redacted]	[redacted]	
Salary Loaders[2]	[redacted]	[redacted]	[redacted]	[redacted]	
Subtotal Direct & Indirect Costs	[redacted]	[redacted]	[redacted]	[redacted]	
Costs from Others					
IT	[redacted]	[redacted]	[redacted]	[redacted]	
Facility Space	[redacted]	[redacted]	[redacted]	[redacted]	
Fleet Vehicles	[redacted]	[redacted]	[redacted]	[redacted]	
HR Employee & Payroll Service	[redacted]	[redacted]	[redacted]	[redacted]	
Other Crosscharges	[redacted]	[redacted]	[redacted]	[redacted]	
Subtotal Costs From Others	[redacted]	[redacted]	[redacted]	[redacted]	
TOTAL COSTS	[redacted]	[redacted]	[redacted]	[redacted]	***$0***
PHI Costs Seconded to EBSCo			-$2,685	-$3,532	$0
EBSCo Billed to PHI			$3,222	$3,977	$3,857
Restatements			-$534	-$255	$0
Net Distributed to LOBs	***$3,732***	***$3,553***	***$2,982***	***$3,779***	***$3,857***
ACE Share ($)	*$756*	*$840*	*$216*	*$14*	Not Yet Available
ACE Share (%)	*20%*	*24%*	*7%*	*0%*	

Exelon Internal Audit and Controls operates under a charter addressing its independence. Functionally, the Chief Audit Executive reports to the Audit Committee of the Board of Directors. This committee has the authority to approve staffing, budget and the audit plan of the Internal Audit Department. For administrative purposes, the Chief Audit Executive reports to the Exelon's Chief Financial Officer.

3. *Audit Plans*

We reviewed the audit plans prepared annually by the Internal Audit group, employing input from stakeholders (such as the business units and the finance organizations). These plans assemble and assess operations and finance risks that may bear examination. A risk ranking process leads to the development of a plan for specific activities and examinations designed to provide assurances to the Audit Committee and management regarding the integrity and adequacy of internal controls, risk management and corporate governance.

These audit plans address more than audit-specific activities, covering Internal Audit's involvement in and support of a variety of business planning, risk management, and strategy and corporate values activities. A designated management group has responsibility for overseeing successful completion of the risk assessment process according to defined methods and processes. The resulting assessment underlies development of an annual audit plan that the Exelon Board Audit Committee reviews for approval.

We reviewed the Quarterly Audit Reports to the Exelon Board Audit Committee. We examined them for connection to clear risk assessment and ownership processes as documented in company procedures. The quarterly reports addressed, risk assessment and ratings, management involvement in audit recommendations and remediation of internal control deficiencies, audits planned and completed, and significant audit recommendations. We observed report updates on a variety of subjects, which included construction projects, integration and merger activities, staffing, and talent development. The quarterly reports regularly addressed and provided updates to issue risks, control deficiencies, open and closed audit recommendations and management's remediation plans, and SOX compliance initiatives and updates.

The PHI and Exelon quarterly Internal Audit Status Reports to the Audit Committee also addressed SOX 404 Compliance issues (*e.g.*, testing of key control activities, annual controls, fraud risk assessment, and special investigations). Exelon's independent accountant also undertakes risk assessments and resulting audits. They have addressed inter-company accounting, general ledger accounting and the month-end closing process. The key controls audited by Internal Audit include PHI's Cost Allocation process and controls testing for 2014, 2015 and EBSC's Cost Allocation process for 2017, which are discussed in the following section.

Fraud activity falls within risks assessed and audited. An annual "Fraud Risk Assessment Process" identifies and evaluates fraud risk categories that include fraudulent financial reporting, misappropriation of assets, and corruption or illegal acts such as kickbacks/inducements, and market manipulation.

4. Audits Involving ACE

We reviewed a list of ACE-related internal audits scheduled and completed from 2014 through 2017 and planned for 2018. The list of those completed identified more than 80 matters, with 7 planned for 2018. The format for formal audit reports to management and the process owners subject to examination includes: an executive summary describing purpose and scope, a conclusion about the effectiveness of the applicable controls, and issues found. The reports identify any management action plans deemed needed. Appendices provide the audit conclusion ratings and defined issues. Rating categories include: Effective, Generally Effective, Needs Improvement, or Ineffective. Issue ratings are either High, Medium or Low.

We found that Internal Audit completes scheduled Cost Allocation Process Reviews every two years, as service agreements require. We reviewed the following examples:

- PHI Cost Allocation Audit for audit years 2013 and 2014
- PHI Cost Allocation Process for audit year 2015
- BSC Cost Allocation Review for audit year 2016.

PHI Internal Audit undertook the 2014 audit and the Exelon Internal Audit and Controls group performed the next two. All three produced a rating of "Effective," meaning in 2014 that "processes and controls are adequate to ensure that the Service Company allocations are in compliance with the cost allocation guidelines in the 2014 PHI Service Agreement." The same rating for the 2015 and 2016 reports meant that the internal controls applied managed risks that could have prevented the company from meeting essential business objectives.

These audits have assessed whether the cost processes, controls and allocations methodology that distribute costs to ACE comply with the Cost Allocation Manual and the applicable Service Agreements. The audits included examination of a sample of billing and source documents to ensure services provided were authorized, documented and accurately recorded in the books. Internal Audit also reviewed compliance of PHISCo and EBSCo allocation methods with methods described in the respective Service Agreements. The audits for the 2014 and 2015 years also evaluated cost allocation processes holistically, seeking to determine whether adequate segregation of duties and relevant policies and procedures existed and functioned. The auditors identified and reviewed the Key Financial Controls (KFCs) addressing cost allocation processes. The three applicable KFCs passed the control tests applied. The report for year 2016 included a comprehensive audit of costs allocated by EBSCo to all affiliates.

5. Audit Issue Tracking

We found that Internal Audit completed scheduled audits in sufficient conformity with its audit plans, which reflected the application of risk assessments of processes. We observed evidence of audit team meetings with management to discuss issues and processes to be audited, identify documentary evidence to be used and retained, follow-up with management on report findings, remediation plans, and recording of issue closure. We found documentation of testing of internal controls of the processes existence and effectiveness. Follow-up emails are issued to the owners of required remediation actions (responsible management). These emails list the failed control, how the control failed, a risk rating impact, a remediation plan (how management will address the ineffective control), and identify changes to make the control operate effectively.

Management receives audit reports for response and to generate an action plan to remedy deficiencies found. Once the failed control issue has been remedied by management, the audit group assesses the design of the control to determine if it is effective and performing properly.

Exelon tracks deficiencies, recommendations and remediation plans with its Team Central Implementation Tracking mechanism. PHI has used its Status of Internal Audit Recommendations (SIAR) to track open audit recommendations. Management receives a notice upon successful confirmation that the underlying issue has been solved, and the tracking mechanism marks the issue as closed. We reviewed the list of high priority audit issues tracked for 2014 through 2017. Internal Audit rated six issues as "High" - - three each in 2014 and 2015. We also examined a schedule of significant deficiencies identified during this period. The five identified had all been remediated, with completion in 2014 and 2015. No material weaknesses were identified between 2014 through 2017 and no significant deficiencies in 2016 and 2017.

Tracking documentation provides an issue number, the year of deficiency identification, remediation status, deficiency weakness rating, year remediated, and the control deficiency description and remediation steps completed. The documentation showed all deficiencies remediated within one year of issue identification. This documentation demonstrated that management addresses open recommendations, reports progress made on required actions, and remediates and closes open issues. The Internal Audit & Controls group also reports audit issues and SOX deficiencies to the PHI Chief Executive Officer, the PHI Chief Operating Officer and to the Audit Committee of the Board of Directors in the quarterly Audit Committee Meeting/Internal Audit Report.

6. *Sarbanes Oxley and Exchange Requirements*

a. Sarbanes-Oxley Act (SOX)

In 2002, Congress passed the SOX legislation to protect shareholders. The Securities and Exchange Commission (SEC) administers SOX by setting compliance deadlines and provides rules on requirements for publicly held companies. Specific SOX sections most relevant to this task include sections 302 and 404.

Section 302 requires senior officer certification in each annual (10K) or quarterly (10Q) report that: (a) he or she has reviewed the report, (b) it contains no material untrue or misleading statements or omissions, and (c) the financial statements and related information fairly present the financial condition and the results in all material respects. The senior officers have responsibility for and must evaluate internal controls and report any findings, identify deficiencies related to employee fraud and significant changes in internal controls or related factors that could have a negative impact on the internal controls. Section 404 provides that 10Qs and 10Ks address the scope and adequacy of the internal control structure and procedures for financial reporting. Internal controls and procedures must be assessed for effectiveness. The independent accountant provides an attestation to and report on the assessment of the effectiveness of the internal control structure and procedures for financial reporting.

Public companies must choose a controls framework to assess and report against when designing and operating effective internal controls. Management has chosen the 2013 integrated COSO controls framework. This framework identifies five internal control environment components addressed in annual assessments of processes and controls:

- *Control Environment*
- *Risk Assessment*
- *Control Activities*
- *Information and Communication*
- *Monitoring*

The Financial Controls Group has a primary responsibility for the SOX compliance and the overall internal control review and monitoring process. The Exelon Financial Controls Group Training Manual (dated September 6, 2017) provides the group guidance in reviewing SOX controls are reviewed for adherence. The Manual describes the activities and structure for examining compliance related to the report on Internal Controls over Financial Reporting (ICFR). It also addresses risk assessment processes covering key operating and financial risks, control testing, identifying control deficiencies, and monitoring of those deficiencies. Exelon has based the manual on the Public Company Accounting Oversight Board (PCAOB)'s Auditing Standard 5 (AS5) and best practices identified through external research.

b. Risk Assessment and Management Ownership

Exelon describes its risk management model as "Three Lines of Defense." These lines comprise ownership, oversight and assurance functions for transaction and process risks. These functions identify and manage risks through controls and corrective actions designed and executed to address control deficiencies. "Ownership" seeks to promote accountability of the controller's organization, business units and other stakeholders. "Oversight" flows from the SOX Steering Committee and Financial Controls group for SOX compliance. The Steering Committee governs the SOX program, while the Financial Controls group assesses and monitors the design and operation of the controls, facilitates risk management activities, and provides advice. Internal Audit provides "assurance" that an independent source is verifying effective governance, risk management and internal controls.

Following a process for identifying transaction and process risks, management can test controls. The process assigns a risk rating of High, Medium, or Low, to risks based on quantitative and qualitative criteria, and considering the impact should the risk occur and likelihood that it will occur. Management uses these quantified risk ratings to identify the accounts and activities presenting comparatively higher threats, therefore warranting increased focus in testing. The rating drives the nature and extent of control coverage needed to adequately mitigate risk.

c. Internal Controls Testing

SOX Section 404 requires management and the external auditors to report on the adequacy of Internal Controls over Financial Reporting (ICFR). The assessment and testing of internal controls comprise an important function for internal and external auditors. Auditing standard AS5 states that *"an auditor should use a top-down approach to the audit of internal control over financial reporting to select the controls to test."* Exelon Company applies a risk-based, top-down approach in SOX activities to identify transactions and activities that warrant review and testing. Preventive and detective controls seek to prevent and if not to detect errors and misstatements in financial statements. Preventative controls seek to reduce the likelihood of misstatement (*e.g.*, review and approval of journal entries prior to input, required fields, batch controls, segregation of duties, approval of accounts payable invoices). Detective controls seek to identify errors or misstatements that have occurred (*e.g.*, comparison of budget-to-actual financial results, monthly reconciliation).

Management's assessment under Section 404 addresses the adequacy of the design of the controls and their operating effectiveness of the controls, supported by the Financial Controls group. Three ICFR categories determine testing requirements:

- Key Financial Controls: testing required for in-scope processes
- Non-Key Financial Controls: testing not required
- Entity-Level Controls: testing required
- IT General Controls: testing required for in-scope systems

Process and control owners are expected to possess a detailed understanding of the established controls. Owners' expertise and professional judgement inform assessment of whether the controls applicable comport with the level of assigned risk. Financial Controls assesses the risks that covered processes impose. Testing then follows to confirm in place and effective controls. A manual details the steps applicable for entity- and transaction-level controls. Controls with a risk rating of "High" require more testing than those rated "Low." These ratings provide key determinants in identifying KFCs, which have documented bases for ensuring adequate definition, transaction processing and recording, and testing.

For example, verification of billing rates and Activity Pricing Types (ATPs) undergo testing to ensure that rates have been input into SAP correctly and are functioning as designed. Allocation of common costs comprised an important focus of our audit work. They provide another example. Internal controls guide correct application and calculation of allocation ratios (SKFs) for common costs spread among Exelon entities. We observed the following internal controls as part of the Summary of Key Financial Controls and Risks review process used during the month-end closing process:

- **C-101423**: Changes to statistical key figures (SKF's) and drivers are updated monthly, quarterly and yearly by the designated accountant in Accounting. Support for the SKF calculation is reviewed for overall accuracy and compliance with the definition of Service Company allocation methods as defined in appendix B of the Service Agreement by the Accounting Manager, Supervisor, or designated accountant.
- **C-101403**: Assessment cycles are updated each month as required for changes in sending and receiving cost centers, SKF factor and allocated amounts. The designated accountant will ensure assessment changes are compliant with the allocation and other requirements outlined in PHI's Cost Allocation Manual and Service Agreement. All assessment changes, including new assessments, are noted on a change log which is reviewed and signed off by the Accounting Manager, Supervisor, or designated accountant. The change log and supporting documentation are maintained in the Intercompany Accounting files.
- **C-104584**: To ensure the SKF data posted to SAP is correct, a designated accountant in Corporate Accounting reviews the SKF data posted to SAP monthly (except for Type 1 SKF's which are done annually) to verify that it agrees with the excel spreadsheet documentation reviewed when the drivers were updated. Review documents are retained in Accounting.
- **C-103501**: After the system has been updated based on any changes as described in control C-101403, the assessment cycles are run. To verify all allocations have been run and the sending cost centers have cleared, the 533 report is run for the Shared cost center group to verify zero balances in all sending cost centers. The final reports are reviewed by the Accounting Supervisor and signed off.

7. Affiliate Transaction Controls

Utility regulatory authorities and their stakeholders have a strong interest in ensuring that affiliate relationships, transactions, and activities conform to applicable requirements and expectations. An extensive and complex set of relationships and large affiliate costs, such as those encountered here heighten that interest. We address these affiliate matters in a number of this report's chapters (see, for example, Chapter VII, addressing EDECA and related areas, Chapter IV; addressing cost allocation methods, Chapter XI addressing staffing and costs including those for common services from service companies). Those chapters present a number of conclusions and recommendations addressing a wide range of affiliate matters, some of them connected to the subject of controls. This chapter focuses on internal controls specifically addressing affiliate transactions. It does not seek to provide a holistic view of the subject of affiliate relationships, transactions, and activities.

Management records all affiliate transactions to ACE's general ledger; no separate ledgers capture the subset consisting of affiliate transactions. Each entity has a separate general ledger to record its transactions to general ledger accounts, which include sub-accounts. No sub-ledgers or distinct accumulation of data is required for competitive business segments because none exist within ACE. The accounting process collects and records transactions within ACE's general ledger which provides the basis for reporting. The enterprise financial system employs a separate field (titled "Trading Partner") to ensure proper recording and reporting of costs. It assigns a specific company code to each entity for association with accounting entries. ACE has a specific company code of 1500.

Code blocks, strings of accounting identifiers, collect and direct transaction costs to the proper company, general ledger account, sub-account, and cost center. Liberty verified that separate intercompany accounts receivable and payables exist for all affiliate transactions, with the exception of Millennium Account Services, LLC and W.A. Chester. See Chapters IV, *Cost Allocation Methods* and VII, *EDECA* which describes relationships and transactions with these two entities.

The Cost Allocation Manual documents procedures for asset sales and transfers between affiliates. It states that any transfers of utility assets from ACE to an affiliate will be recorded at book value or fair market value. If utility assets are transferred from an affiliate to ACE it will be recorded at the lesser of book value or fair market value. ACE transferred assets in 2017 and provided documentation of the asset transfer from ACE to Pepco, an affiliate. The assets transferred were meters and the transfer was recorded at book value. The book value was approximately $3,000, and immaterial.

KFCs comprise an integral part of the month-end closing process for PHI and Exelon. These KFCs undergo testing as part of SOX activities (as explained above). Examples of KFCs include controls for processing journal entries for the intercompany billings between Exelon affiliates and the allocations from PHISCO and EBSC to affiliates recorded during the month end closing process. We reviewed a list of the PHI and Exelon KFCs associated with the affiliate accounting processes. Management performs these KFCs, depending on their nature and the entities involved, daily, multiple times per day, monthly, quarterly, annually and at year end. These KFCs include a control process and a sub-process.

We found KFCs for PHISCO, ACE and the other PHI utilities as well as EBSC and its affiliates. For example, the EBSCo process titled "Review of Monthly Billings" includes a CTR Close Report process and an Allocations sub process. The control documentation describes the function the control exists to perform. In this example, the control requires monthly review of the monthly affiliate billing process, analysis of EBSC's revenues, expenses and balance sheet, and identification of any monthly trends when compared to the previous and current month actual and budgeted data. A meeting to discuss the results and identify issues warranting follow-up and inquiries occurs monthly. The CTR Close Report process is completed monthly during the month end close process.

Management reported the existence of a number of external Cost Allocation Manual and affiliate transaction examinations involving PHI entities and required by its state regulatory commissions. Management reported that none of these examinations has identified any material or substantive issues.

8. Affiliate Transaction Reporting

We reviewed internal and external reports of affiliate transactions. The service companies provide internal detailed monthly billing reports for the services provided to ACE and affiliates. Management provides reports to external entities, with the annual FERC Form 1 and PHISCO and EBSC Form 60 reports for affiliate transactions comprising primary examples. Management does not provide regularly prepared affiliate transaction reports other than what is reported and included in the FERC Form 1 and the Form 60 reports, or as required by Exelon merger commitments (see Chapter VIII for a discussion of those).

Internal reporting occurs in the context of review of services provided by EBSCo and PHISCo to or for the benefit of ACE and other affiliates. Those service undergo review by service company, holding company, and benefitting operating unit under provisions set forth in underlying service agreements. Requests for new services by a receiving entity trigger service company accounting personnel to identify the measures for controlling new services. Billing reports from PHISCo and EBSCo go monthly to PHI entities (including ACE) and other affiliates. These reports describe and categorize charges for the types of service provided. The reports identify the charges as direct and indirect (allocated) costs.

Department managers have responsibility for reviewing costs charged to their departments, including those from utilities. However, we did not find procedures addressing specifically how managers should proceed in controlling their charges from affiliates. The billing reports they receive do have drill-down capabilities that allow them to review charges at greater levels of detail, called service categories for PHISCO and service IDs for EBSCo. For example, management can, when reviewing the general category of Executive Management charges it receives, identify the specific line items making up the totals. Continuing with this example, cost detail available under Executive Management include executive support, chief of staff reporting to the CEO, administrative assistant, and many others. The multiple line items provide a reasonable level of transparency in relating costs charged to expectations for the year, and in examining trends and variations from month to month. A similar structure and drill-down capability exists for charges from PHISCo- and EBSCo-level common service functions.

A set of cost centers exists to define the type of services provided and Service IDs identify the specific type of service charged. The managers and analysts of the service receiving entities have access to contact PHISCO and EBSCo accounting personnel with questions about specific charges within their billing reports.

The service companies provide monthly variance analysis and reports for each operating company, including ACE. PHISCo finance personnel perform variance reporting from a service company level, but do not regularly report detailed explanations of costs billed specifically to ACE. Management reports that it conducts variance analysis on affiliate transactions reporting as part of the accounting department's balance sheet and income statement review processes. These quarterly analyses and review activities compare current and prior year actuals. The EBSCo finance group prepares current year actuals to budget and forecast for the operating companies. The report and analysis includes explanations of variances between actual and budget or forecast. The EBSCo finance group began providing the analysis to PHISCo Finance in December 2016. We reviewed the EBSCo variance reports for 2016 and 2017 and PHISCo reports for 2015 through 2017 corporate center and support services.

We reviewed ACE FERC Form 1 and PHISCo and EBSCo Form 60 report filings for 2015, 2016, and 2017. We did not find their content atypical.

The general document retention policies (not specific to affiliate relationships and transactions) apply to affiliate documentation. The service and operating companies operate under an Exelon Records Retention Schedule. Management archives and maintains records in a manner that makes them easily identified, located, and retrieved.

9. *Compliance and Ethics*

a. Code of Conduct Reporting and Disposition

The Exelon Board's Audit Committee oversees the processes for receiving, retaining, and resolving potential violations. An Exelon-level Ethics Office, headed by the EBSCo legal group's Vice President and Deputy General Counsel, Compliance and Ethics, directly manages these processes, and maintains a confidential reporting system. An EBSCo Vice President & Deputy General Counsel, Compliance & Ethics heads this office, which operates on an Exelon-wide basis. The Ethics Office head reports to the EBSCo Sr. Vice President & General Counsel.

The Audit Committee receives an Annual Compliance and Ethics Program Report. This report addresses the structure of the compliance program, and discusses the role of the compliance group. That role includes the following elements:

- Governance
    - Compliance program framework
    - Corporate management model
    - Anti-bribery and corruption program
    - Records and information management and merger commitment tracking
    - Integrated privacy program
    - FERC standards of conduct program
    - FERC interlock, subsidiary management programs
    - Ethics Helpline and investigation
- Compliance risk assessment and modeling
    - Methods
    - Key performance indicators
    - Risk steering committed membership
    - Oversight of mitigation actions
- Compliance support
    - Operational impact of regulatory changes
    - Initiative to align compliance, audit, and risk

    - Compliance procedures
    - Legal support for risk areas
- Compliance execution and adherence to procedures
    - Engagement with compliance subject matter experts
    - Training and communicating awareness
    - Legislative review, standards development, regulatory outreach
    - Legal review of due diligence questionnaire responses.

The annual report also reports on compliance metrics, describes focus areas for the year, summarizes "hot" compliance topics, reports status in executing merger commitments by state. The report for 2017 listed resources and costs for compliance activities. It showed 53 compliance risk areas assigned (47 to businesses or functions, 6 retained at the corporate level). The 2012 actual costs of $1.98 million grew to $2.29 million in 2017. Staffing within the Corporate Compliance grew form 8 in 2011 to 11 in 2017. The organization leveraged resources with defined compliance roles throughout the Exelon entities. The number of full-time-equivalents with directly assigned compliance responsibilities increased from 279 to 472 from 2012 to 2017. The 2017 complement included 45 subject management experts.

The report to the Exelon board's Audit Committee also includes a heat map showing the risk probability and severity of each of the 53 risk areas. Many relate specifically to utility operations across the Exelon footprint and two (Standards of Conduct and the BPU generally) specifically address New Jersey. Both rank fairly low in probability of occurrence (less than 10 percent), but high in severity (ranked in the fourth highest of five severity categories).

The Ethics Office has responsibility for performing or overseeing the investigation of issues arising under the code, resolving such issues, providing feedback and information about issue disposition to the reporter of the incident or issue reporter, and generally providing guidance and code interpretations as required. The Ethics Office also has responsibility for reporting to senior leadership (General Counsel, Chief Audit Executive, Chief Executive Officer or Board Audit Committee) any issues requiring immediate action. The Ethics Office provides the Exelon Board's Audit Committee quarterly reports describing serious matters and summarizing pending matters, status, resolutions, and corrective actions.

Employees can report concerns by: (a) discussing them with supervisors, (b) escalating them to higher levels upon concern that the supervisor is not responding appropriately, (c) formally established avenues (*e.g.*, labor grievance processes), (d) speaking with Legal, Human Resources, Ethics Office, Internal Audit, or Security department personnel, (e) contacting the Ethics Helpline (anonymously if chosen), or (f) emailing the Ethics Office. Employees can make Ethics Office or Helpline contacts and reports anonymously. Those who make direct contact with the Ethics Office may also request anonymity.

The procedure calls for maintaining confidentiality "to the fullest extent possible," prohibits retaliation for good-faith raising of concerns or issues, and calls for discipline for any retaliation that does occur.

b. Corporate Compliance Program

Exelon has adopted a programmatic approach to ensuring corporate compliance. Headed by the Vice President & Deputy General Counsel, Compliance & Ethics, an Exelon-wide Corporate Compliance Office governs the program. An Ethics and Compliance Steering Committee provides program oversight, and assigned subject matter experts, with the Exelon Board Audit Committee providing ultimate guidance. The steering committee has some 20 members, consisting of senior officers from Exelon, EBSCo, and the operating units. The PHISCo Senior Vice President, Legal & Regulatory Strategy serves as the PHI representative. Recent reports address a number of topics:

- European Privacy Law Initiation
- Cyber threat update
- Summary of investigations of vendor cyber issues or events
- Three-years of data on sources of ethics cases
  - Workplace respect and employee relations
  - Misuse or appropriation of assets
  - Requests for guidance and other
  - Financial concerns and process integrity
  - Environmental health and safety
- Summary of efforts to provide ethics overview and training
- State regulatory inquiries
- Violations
- Settlements of violation claims
- External investigations opened and closed
- Outcome-based metrics
  - External violation determinations made by enforcement authorities
  - Amounts of fines and penalties
  - Estimated violation mitigation costs
  - Self-reports to external authorities
  - Incidents identified by properly operating controls
  - Violation investigations initiated by external authorities
  - Percent of compliance internals risk assessments completed on time
  - Gaps identified by internal risk assessments
  - Mitigation action reviews completed
  - Percentage of employee survey responses indicating comfort in reporting ethical concerns
  - Number of matters added to ethics database
  - Percentage of matters involving immediate person, property, or environmental threat
  - Number of "yes" responses to ethics training certification question about awareness of unreported violations
- Activity-based metrics
  - Internal investigations initiated
  - Person-hours spent on compliance training
  - Completion rate for mandatory compliance training
  - Compliance risk areas experiencing increased/decreased probability or severity
  - Percentage of Internal Audit reviews addressing compliance risk areas

- Internal audits addressing compliance risk areas.

The compliance program identifies and scopes "Compliance Risk Areas" warranting detective or preventive controls. Executives, managers, or attorneys designated as "Compliance Area Leads" have responsibility for coordinating resources and work required to perform compliance tasks identified as necessary for compliance in their areas of responsibility.

Key program elements consist of annual assessment of compliance risks (new and ongoing), identification of elimination or mitigation measures, assignment and execution of responsibilities for such measures, tracking of required actions, investigations of compliance activity risks or failures, periodic reviews of mitigation effectiveness, compliance metrics (both outcomes and activities initiated/completed) reporting, training, and periodic auditing.

A PHI-level Compliance Tracking Tool Procedure provides for formal tracking of regulatory commitments, seeking to ensure completion of required compliance items on schedule. It operates on the basis of item identification and entry into a Compliance Tracking Tool. The tool uses alerts to inform subject matter experts, regulatory management and responsible attorneys of specific compliance items and dates arising from FERC and BPU orders and regulations, merger commitments, and special items added by regulatory or legal resources engaged in regulatory activities. The tool provides for a comprehensive list of compliance actions and dates, permits tracking of their status, provides warnings for items whose timely compliance is in question, and provides for entries to close out open items.

Exelon has assigned compliance-related Subject Matter Experts to each of its operating entities. The two New Jersey areas with assigned experts comprise: (a) affiliate regulations compliance, and (b) standards of conduct reporting. The experts assigned include two Assistant General Counsels (one essentially dedicated to New Jersey regulatory matters), an Associate General Counsel, and the Director, Regulatory Strategy & Services.

c. Employee Issues Advisory Committee

Exelon employs an Employee Issues Advisory Committee. Monthly reports circulated to about 25 officers across the Exelon entities, including senior PHI executive leadership and counsel receive monthly reports that address statistics, positive or negative trends, and summary explanations (by entity, down to and including the ACE level):

- New Grievances
- Written Disciplines
- Terminations
- OSHA Recordables
- Positive Drug Tests
- Ethics Hotline Referrals.

10. Litigation Implicating Governance or Executive Management

Annual 10-K filings with the SEC report major litigation underway. The Exelon 10-K filing early this year lists a number of major litigation proceedings. The most significant concern the operations of its subsidiary, Exelon Generation. The new U.S. presidential administration has signaled a major review of environmental requirements, many of which have been the subject of major litigation. They do not have direct bearing for ACE, but have the potential to affect prices for securing BGS services and to affect the financial condition of Exelon. Principal matters of this type include:

- The EPA's 2011 Mercury and Air Toxics Standard Rule (MATS), reducing toxic power plant emissions - - under challenge by many entities, but supported by Exelon, the rule's legality is before the U.S. Circuit Court for the District of Columbia on remand from the U.S. Supreme Court
- Litigation addressing the EPA's Clean Power Plan - - held in abeyance by the D.C. Circuit Court, pending proposed EPA elimination of the Plan.
- Litigation addressing the EPA's 2015 Ozone National Ambient Air Quality Standards (NAAQS). On April 11, 2017, the D.C. - - held in abeyance by the D.C. Circuit Court pending EPA review of the Rule.

The 10-K filing reports other sources of litigation arising from operational, income tax, and regulatory matters that appear characteristic of the normal course of the electricity generation and distribution businesses. None concerned PHI or ACE directly. Press reports indicated that PHI and Exelon settled, for payment of attorney's fees, a suit by a class of investors who claimed that the merger undervalued their holdings. Other litigation involving Exelon Generation concerns contests, now on appeal before two U.S. Circuit Courts, of state powers to provide subsidies to nuclear generating stations.

I. Conclusions - - Internal Controls, Compliance, and Ethics

16. The Exelon board's Audit Committee structure, membership, and charter fully support an independent audit function.

Exelon has consolidated auditing at the holding company level, moving the function from PHI post-merger. All committee members are independent directors, the reporting relationship between the committee and internal and external auditors is appropriate, and the scope of the duties and responsibilities of the committee are sufficiently comprehensive. The committee also has an appropriate oversight role in ensuring that legal and regulatory compliance management are comprehensive and sound and in ensuring that concerns raised about compliance and ethics undergo prompt investigation and resolution, under sufficient assurances of anonymity and means for protecting it.

17. Internal Audit has operated with sufficient independence and with continuity following the merger with Exelon.

The Chief Audit Executive operates under the substantive direction of the Exelon Board Audit Committee. Resources have remained dedicated to the performance of audit activities directly concerning PHI LLC and ACE, and indirectly (at entities, like EBSCo, who make substantial charges to PHI entities, including ACE). Regular interface with the Audit Committee occurs, and the committee reviews and approves plans, has authority over auditing resources, and receives regular reports of audit performance and results.

18. Management has applied a comprehensive, structured and timely approach to addressing Sarbanes Oxley Sections 302 and 404 and any controls issues identified by its testing.

We reviewed the documentation supporting the internal controls design, implementation, testing, and corrective processes. Examples include the Exelon Financial Controls Group Training Manual (Manual), the Risk Control Matrix, the Key Financial Controls, 10K reports, risk assessments, testing results, and tracking of matters requiring action. The documentation provides comprehensive guidance, testing has been comprehensive, and management has tracked and completed actions identified as material in ensuring the effectiveness of controls.

Management assesses the adequacy of controls design and operating effectiveness, and the operating effectiveness of the controls, using dedicated resources operating under clear procedures and processes, and applying well-designed activities.

19. Management's risk assessment process and management ownership of internal controls are adequate and supported by appropriate documentation.

The company's risk assessment and management ownership and how it is applied within the company is adequately described and documented in the Company's Financial Controls Group Training Manual and the Risk Control Matrix. Management's designation of ownership, oversight and assurance components of transaction and process risk management has produced clear responsibilities and accountabilities. Management has supported them with measures to identify and manage risks through design and operation controls and corrective actions to address control deficiencies. The SOX Steering Committee responsible for governance over the SOX program; the Financial Controls group responsible for assessment and monitoring of design and operation of controls provide for effective overall management, with Internal Audit offering independent assurance that the governance, risk management and internal controls activities are effective.

20. The Exelon Board Audit Committee has received comprehensive and timely notice of risk assessments, plans to address those risks, status of efforts to do so, gaps and threats found, and measures to address them.

The reporting we observed shows adherence to procedures, guidelines, methods, activities, and schedules for assessing and managing risks, and reflects the provision of information about emerging risk areas.

21. We found adequate internal audit examination of the effectiveness of internal controls and processes for affiliate cost allocations.

Audit scope was sufficient and audits were performed in each of the three years we examined. Formal audit reports were issued to management. The objective of the audits was to assess compliance of cost processes, controls and allocation methods for distributing costs to ACE cost allocation manual and service agreement requirements. The scope of the audits included examination of source documents, proper authorization, and accurate recording. The audits addressed allocation methods and factors. We found the audit process and testing of the internal controls adequate and well documented.

22. Deficiency and recommendation practices and reporting have been both timely and sufficiently comprehensive.

Management must prepare action plans to address deficiencies and gaps found. Formal tracking systems follow open issues to closure. The audit group assesses management's design of remedial measures for effectiveness and sound operation. There is an appropriate process for confirming remediation step execution before issue close-out.

23. Controls exist to provide for proper and accurate accounting.

Management records all affiliate transactions to ACE's general ledger. No separate ledgers exist for affiliate transactions. Each entity has a separate general ledger to record transactions to general ledger accounts, which include sub-accounts. A separate field in the enterprise financial system identifies the affiliate associated with accounting transactions. ACE has a specific company code assigned to collect all activity related to it. We verified that separate intercompany accounts address affiliate receivables and payables. The internal controls related to affiliate transactions give management a sound basis for ensuring proper and accurate accounting of affiliate transactions.

24. Our review of affiliate transactions reporting found that internal reports give PHISCo and ACE a basis for analyzing and assessing affiliate costs and our review of publicly required reports disclosed no material concerns.

We reviewed the internal billing reports completed by the service companies that are provided to ACE and other affiliates. Liberty found the reports sufficient to support review. Variance reports provide information supportive of such review. We found no material concerns with the content of state- or federal-required reports of affiliate transactions or costs. We separately address EDECA reporting and other requirements in Chapter VII.

25. Exelon operates comprehensive and reasonably independent compliance and ethics programs.

The programs operate under dedicated leadership, structured procedures, assurances of anonymity, precautions to avoid retaliation, methods to promote prompt issue investigation and resolution, and a wide-range of performance metrics. The Exelon Audit Committee and a broad management group receive regular status and performance reports. Exelon includes an on-line training module addressing compliance and ethics, which reinforces their importance and consequences for violations, and encourages and clearly details avenues for anonymous reporting.

26. Affiliate transaction controls provide reasonable assurances of proper and accurate accounting.

Management records all affiliate transactions to ACE's general ledger; no separate ledgers exist specifically for affiliate transactions. However, each entity has a separate general ledger to record its transactions to general ledger accounts, which include sub-accounts. The accounting process collects and records transactions within ACE's general ledger - - providing the basis for reporting. To ensure that an affiliate company is recording and reporting their costs accurately, as an internal control there is a separate field required in SAP known as the "Trading Partner" used to identify the company code of the affiliate associated with the accounting transaction or entry. In addition, ACE has a specific company code, 1500, assigned to it which collects all activity related to ACE within the accounting code block. Liberty verified that there are separate intercompany accounts receivable and payables for all affiliate transactions.

27. The company's internal and external reporting of affiliate transactions complies with applicable requirements.

We reviewed the internal billing reports completed and provided by the service companies to the internal users of their services. The reports detailed costs for the affiliate cost center managers to review. The affiliates have the ability to drill down to lower level service categories to identify the type of activities and costs that make up the service provided by the service companies. In addition, the service recipients receive variance reports that include actual to actual and actual to budget comparisons of affiliate transactions on a periodic basis.

ACE's Form 1 report includes affiliate transactions at a summary level. Form 60 reports exclusively address affiliate transactions. We found reports of affiliate transactions as required by company, state and Federal requirements.

J. Recommendations - - Internal Controls, Compliance, and Ethics

We have no recommendations in the area of Internal Controls, Compliance, and Ethics.

Chapter X: Human Resources Table of Contents

Chapter X: Human Resources

A. Chapter Summary and Background

We address in Chapter XI, *Staffing and Compensation*, a number of functions and activities that deeply engage human resources groups. Here we focused on the structure, resources, costs, and metrics of the function, along with several specific topics. We found that the consolidation of human resources functions at the EBSCo level post-merger has produced efficiencies, cost reductions, and an enhanced approach to management of the function through clear goals, objectives, procedures, and performance tracking and accountability.

A large company's human resources information system (HRIS) forms an important backbone in providing services to employees. Those services rely on very large amounts of data and that give employees on-line access to many important aspects about their relationship with their employer and to many sources of learning, both developmental and job specific. The transition from an SAP- to an Oracle-based platform has produced a system that continues to function at high levels and that promotes efficiency and effectiveness by bringing the PHI entities and their employees and human resources service providers onto a common platform.

Recruitment, development, and training all operate under a sound structure, using dedicated and capable resources. Relationships with a wide variety of educational, community, and institutional interests provides an effective pipeline of candidates. A particular Exelon emphasis on diversity and inclusion helps to maximize interest in energy careers and actual applications for employment at the PHI utilities, including ACE. Management's commitment to diversity and inclusion extends beyond recruitment, incorporating objectively measurable hiring and promotion steps to secure a diverse workforce, and frequent, consistent messaging that makes clear that all employees are accountable for creating an appropriate workplace environment.

Operational training has been appropriately assigned to the two major entities responsible for direct interface with ACE customers and the network that serves them. Labor relations have been placed under central management, but leaving a local, responsible manager for work with New Jersey represented employees at ACE and PHISCo.

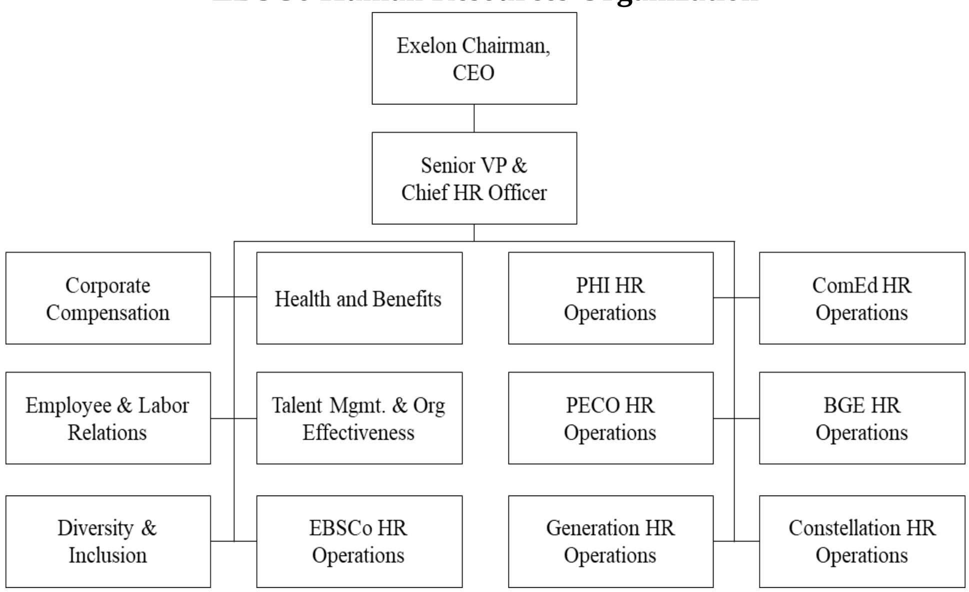
B. Findings

1. *Human Resources Organization*

Following the merger with Exelon, responsibility for human resources functions affecting PHISCo and its three operating utilities (including ACE) moved to Exelon, under Exelon's service company. This service company, EBSCo provides Exelon-wide human resources under the direction of Exelon's Senior Vice President and Chief Human Resources Officer. Twelve executives reporting to this senior Exelon officer divide responsibilities, in part segregated by Exelon business operation and in part by functions largely common to all. The left-hand portion of the next chart shows the portions of the organizations that serve across Exelon entity lines. Five generally correspond to the major functions generally aligned under a corporate HR organization. Another six, while reporting formally to the Exelon Chief Human Resources Officer are effectively embedded in six Exelon operating sectors. The 12th executive reporting to the Chief Human Resources officer handles HR operations for the other departments of EBSCo.

Following the merger, Exelon consolidated PHI Human Resources operations under Exelon's Chief Human Resources Officer. A Vice President Human Resources, reporting to this EBSCo Chief Human Resources Officer is dedicated to PHI (serving all of its utility operations, including ACE). This PHI HR executive operates under PHI's President and CEO, but works closely with the top executive leadership of PHI. A similar, dotted-line reporting relationship exists for the Exelon vice presidents of IT and Communications, who also operate under the direction of EBSCo executives. Other Exelon business operations have similarly dedicated human resources vice presidents - - Commonwealth Edison, PECO, BG&E, Generation, Constellation, and EBSCo. The next chart shows these and the other functions reporting to the EBSCo Chief Human Resources Officer.

EBSCo Human Resources Organization



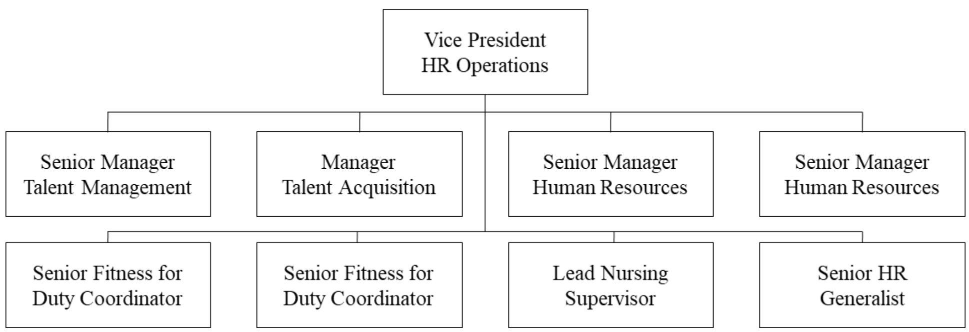
The EBSCo human resources groups providing services across business units has substantial resources under the vice presidents leading them:

- Compensation
  - Director, Utilities Compensation (3 filled, with 3 more positions open)
  - Director, Generation and EBSCo Compensation (staff of 3)
  - Director Constellation Compensation (staff of 1)
  - Principal Compensation Consultant (1 filled, with 3 more positions open)
- Health and Benefits
  - Director, Occupational Health and Regular Medical Services (staff of 8)
  - Director, Employee Benefits Plans and Programs (13)
  - Director, Shared HR Services (28 in payroll and benefits operations and 31 other)
  - Senior Manager, Workers Compensation (staff of 4)
- Talent Management and Organization Effectiveness

  - Director, Talent Acquisition (staff of 7)
  - Director Organizational Effectiveness (staff of 6)
  - Director Talent Management and Leadership Development (staff of 7)
- Employee and Labor Relations
  - Senior Manager Employee and Labor Relations (staff of 4)
  - Director Employee and Labor Relations (staff of 5)
  - Director Employee and Labor Relations (staff of 5)
  - Labor Relations Specialist
- Diversity and Inclusion.

Human Resources staffing at the EBSCo level was 187 in 2018. Human Resources personnel embedded at PHISCo and serving its entities, including ACE full-time, consisted of 23 persons, operating under the following structure. Our prior audit of Pepco found HR staffing in the range of 65.

PHISCo Human Resources Organization



A group of 13 persons addressed labor management in 2018. PHISCo (and in turn ACE) costs for human resources services have fallen after Exelon had an opportunity to centralize top-level management of the function and a number of its activities. The next chart shows changes in human resources costs. After an interim period of adjustment in the two earlier post-merger years, their 2018 levels fell below pre-merger levels.

HR and Disbursements Cost History
(All data in chart is confidential except for the two "ACE Share" lines)

Cost Category	2014A	2015A	2016A	2017A	2018B
Direct Costs					
Compensation[1]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Contractors	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Materials, Equipment, Other	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Software	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Leases, Depreciation, Amortization	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Travel, Training and Meals	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Salary Loaders[2]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Subtotal Direct & Indirect Costs	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Costs from Others					
IT	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Facility Space	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Fleet Vehicles	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
HR Employee & Payroll Service	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Other Crosscharges	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Subtotal Costs From Others	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
TOTAL COSTS	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
PHI Costs Seconded to EBSCo	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
EBSCo Billed to PHI	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Restatements	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Net Distributed to LOBs	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
ACE Share ($)	*$3,621*	*$3,492*	*$3,146*	*$3,218*	
ACE Share (%)	*19%*	*19%*	*14%*	*15%*	

2. HR Systems

Many PHI systems have moved to platforms used by Exelon in the first years following the merger. By the end of 2017, the key, SAP-based systems formerly used by PHI had moved to Exelon's Oracle-based systems and tools.

3. HR Performance Effectiveness

HR management has stated that it uses a series of metrics to compare its performance across the Exelon units it serves. They form part of the comprehensive series of Key Performance Indicators that Exelon uses as part of what it terms its management model and they undergo discussion at regular monthly review meetings. Two leading industry firms have assisted in benchmarking and employee engagement surveys provide a source of feedback on HR performance. Management has also used the services of an expert recognized in building leadership and talent and in helping to align HR practices and competencies with corporate strategy and capabilities.

4. Recruitment, Development, and Training

Management uses the ACE-Exelon external website, Facebook, Twitter, and LinkedIn to post bargaining unit and entry level exempt positions. Management also uses diversity job boards, and sends job-announcing e-mails to county departments of labor one stop career centers, local churches, local colleges/vocational-technical schools, military agencies, disability services, the New Jersey Chamber of Commerce, the New Jersey Commission for the Blind & Visually Impaired, local Spanish community organizations, and the NAACP. ACE also participates in local community events and job fairs.

The organizations have responsibility for training and development of PHISCo and ACE employees. Only the first of the three, shown below resides in the PHISCo HR Operations group:

- Talent Management & Organization Development Customer Operations Performance Consulting and Enhancement
- Utility Operations Training and Methods
- Performance Consulting and Enhancement, within Customer Operations.

Customer Operations training falls under Performance Consulting and Enhancement. This group has a staff of nine, consisting of a manager responsible for customer operations training PHI-wide, a training supervisor responsible for ACE and Delmarva, and seven training specialists responsible for ACE and Delmarva. The Performance Consulting and Enhancement group has responsibility for the design, development, and facilitation of training for Customer Operations employees, except for field employee training. Utility Operations has responsibility for training field employees. Call Center representatives receive most of the training for which Performance Consulting and Enhancement has responsibility. However, the department also provides training to personnel in the PHISCo Billing and Credit and Remittance departments. Performance Consulting and Enhancement facilitates foundational training (in basic system and technical areas, and Subject Matter Experts within the various Customer Operations departments provide on-the-job training).

Call Center training includes:

- New Hire Training for customer service representatives, both internal and outsourced
- Refresher Training and training required for process and system changes
- Second Roles Storm Readiness Training, Crisis Call Center Training and Contingency Training (work stoppage preparation) when appropriate.

Performance Consulting and Enhancement Department uses an Analysis, Design, Development, Implementation and Evaluation (ADDIE) Model, common in large industry. This program consists of the following five sequential phases:

- Analysis - - Identify learning problem goals and objectives, user knowledge, needs, and other characteristics, and learning environment, constraints, delivery options, and timeline
- Design - - Specify objectives, develop prototype materials, graphic design, user-interface and content
- Development - - Create detailed content and materials from design phase
- Implementation - - Develop process to train the teacher and student, distribute materials, delivery training, evaluate materials post-delivery
- Evaluation - - Perform reviews of each stage; develop criteria-based tests to assess delivery success, provide opportunities for user feedback, make changes as needed.

The PHISCo Support Services organization houses the Operations Training & Methods group, which consists of an ACE manager, and four training specialists. This group provides field training. This group's training services seek to improve skills, knowledge, and experiences to produce a qualified workforce and to meet regulatory compliance training requirements. Operations Training & Methods employs five teams. Four of them operate regionally, primarily delivering apprenticeship and regulatory compliance training. The fifth, an Instructional Design-Training Technology-Procedures team responsible for designing training using the ADDIE process and e-learning solutions.

The Talent Management & Organization Development group within Human Resources has responsibility for development courses, exercised through a PHI-wide Senior Manager and two specialists. The previous two groups focus on what the industry typically terms “training,” as distinguished from “development.” Training in this construct seeks to develop job-specific knowledge and skills. Training seeks to impart technical knowledge and skills related to particular jobs, emphasizing improvement in each worker’s abilities. Development focuses more on overall growth and maturity of management personnel. Examples of the differing focuses of training versus development include:

- Related to a specific job versus conceptual and more general knowledge
- Focus on job requirements versus overall employee growth
- Short- versus long-term
- The present versus the future
- Job- versus career-oriented
- Improving present work performance versus preparation for future challenges
- Often, large classes versus few or one participant.

A centrally-operated Exelon Center of Excellence manages all development available to PHISCo and ACE employees. Personnel from this Center work with the PHISCo-embedded Human Resources organization to develop schedules for the offering of developmental courses. Employees receive an available course list through a Learning Management System (LMS) to which all have electronic access. Exelon has largely used courses prepared by outside vendors to offer courses under what it terms its Professional Development and Nomination program.

PHISCo’s internal Talent and Management Development group itself, however, has developed course content to reflect differences in how different Exelon entities operate. Examples include Emerging Leaders and Manager Essentials courses. The newness of PHISCo and ACE employees to the “Exelon culture” has led to curriculum and schedule adjustments.

The principal areas of training delivered by external resources in the ACE region include:

- Commercial Drivers Licensing (CDL)
- Driving Skills
- CPR / 1st Aid / AED
- Confined Space
- New Equipment, the Manufacturer delivers training
- Supervisor Development Program

- Various professional development courses offered through the Learning Management System
- Certain programs for employees nominated to attend, such as Power to Lead and Leaders Developing Leaders
- Specific Human Resources, such as: Leader as Coach, Performance Feedback, Problem Solving, and Career Development, development training for managing bargaining unit contracts, and investigations.

Tracking of training requirements and training provided to PHISCo and ACE employees uses the Learning Management System (known also as the Knowledge Centre). This system tracks both computer-based and instructor-led courses. Employee leadership receives system-generated reports that identify required and completed courses. That leadership has responsibility for ensuring completion of required courses. Employees can use the Learning Management System to take optional courses as well, with the system tracking and reporting their completion as well.

5. Diversity

A Vice President, Diversity and Inclusion leads Exelon-wide efforts to promote diversity and inclusion. This vice president reports to Exelon's Senior Vice President and Chief Human Resources Officer. Exelon has adopted for all of its operations a clear set of diversity and inclusion goals, covering:

- Creating and maintaining a diverse workforce
- Promoting a culture of workplace inclusion
- Producing a range of diverse suppliers
- Maintaining a visible presence with diverse community organizations
- Gaining recognition as an industry and community leader regarding diversity and inclusion.

Management regularly tracks diversity at PHISCo, reporting data for more than ten areas, each having a Percent Diversity goal. The tracking categorizes personnel by women/male and white/minority, reporting the following data:

- New Hires
- Total Promotions
- Promotions from Non-Exempt to Exempt
- Promotions to Grades 5 and 6.

Overall diversity goals include:

- Increasing diversity by one percent each year for five years, starting from a 2018 baseline of 51.3 percent
- Including diverse candidates for all external hirings
- Providing diversity on candidate interview panels and leadership selection teams
- Participation of all vice presidents and directors in at least one external diversity recruiting event.

Dashboards regularly report performance in both sets of categories. A gender equity section compares pay equity levels and promotion and resignation rates between male and female employees.

Exelon operates middle school, high school, university, and military initiatives to promote interest in energy careers and to recruit employees with diverse backgrounds. Exelon does the same with a number of groups focused on employment of persons with disabilities. A significant set of celebrations, orientations, speaking engagements, and similar outreach activities emphasize the company's general commitment to diversity and inclusion and its desire to recruit, develop, and maintain a diverse workforce.

Spending on diverse suppliers has increased over time, reaching an approximately $2 billion per year level Exelon-wide.

6. HR Metrics

Exelon tracks a large number of "Human Capital Metrics" that cover a broad range of human resources performance areas. They include over 60 individual measurements. A comprehensive set of dashboard items also address the status of the talent "pipeline;" persons ready to step into broadened roles as key departures occur. These objective measures provide a comprehensive view of the workforce composition, which offers an indirect measure of the performance of Human Resources, which plays a variety of control and support functions that affect such composition.

7. Labor Relations

Exelon has consolidated overall responsibility for managing labor relations at the EBSCo level, under a Vice President of Corporate Employee and Labor Relations. This executive reports to the Senior Vice President of Human Resources. EBSCo uses a regional approach, which includes an Exelon East group of companies consisting of the PHI utilities, PECO, and BGE. A Senior Manager of Employee & Labor Relations directs those who address labor relations in this eastern Exelon region. A single Labor Relations Principal has responsibility for managing New Jersey union relations for both ACE and PHISCo employees there.

Management reported about 400 ACE and PHISCo personnel operating under four bargaining agreements. Agreements for Local 210 and Local 210-5 cover ACE employees engaged in distribution system field work. The agreements for Local 1238 and Local 1307 cover PHISCo employees performing ACE customer service-related work.

Management tracks three principal labor metrics: written disciplinary actions, terminations, and grievances. They have shown no signs of sustained high levels or increases.

C. Conclusions

1. The post-merger consolidation has improved costs for providing Human Resource services.

Exelon undertook a substantial consolidation of Human Resources functions following the merger. After a transition period that included separation of a significant number of personnel (and associated transition costs) costs to ACE are now at or below pre-merger levels.

2. The post-merger structure has brought improved structure, organization, and measurement to Human Resources services, while retaining at the local level an appropriate mix and numbers of resources.

The post-merger structure has brought a clearer organization, a more comprehensive set of procedures and methods, and measurement of a much broader number of staffing and performance aspects relevant to Human Resources activities. Accountability for performance appears to be clearer, management drives performance under clear and comprehensive goals and objectives, regular tracking of performance exists, and both Human Resources and other management personnel are held accountable for performance relative to goals and a set of Key Performance Indicators. Regular measurement and discussion of performance comprise a particular strength under the new approach and organization.

3. Human Resources systems and platforms changed following the merger, but, as expected of a company of Exelon's size, remain sophisticated, comprehensive, and appropriate.

PHI had used SAP as its platform for human resources information systems (and many other purposes) prior to the merger. Exelon has transitioned its system to an Oracle platform. The transition has retained full capabilities and the new system has been operating effectively. Use of a common system and consolidation of Human Resources functions and activities have gone hand-in-hand in promoting efficiency and effectiveness.

4. Management of recruitment, development, and training are effective.

Management participates in a wide array of recruitment programs and efforts, working with a wide variety of institutional and community organizations to secure access to potential resources, to reach out to diverse populations, and to ensure that key steps in the retention process promote diversity. Training division between customer service and operations organizations reflects an effective approach to analyzing, designing, developing, implementing, and evaluating training tailored to New Jersey customer service and delivery infrastructure support needs.

We did not assess training and development costs directly, given that the introduction of a wide range of new approaches, procedures, controls, methods, and practices as part of the "Exelon Model" has produced significant transitional needs. Moreover, the immediate, post-merger period also coincided with major reliability improvement actions. We saw no indication of cost problems, but did not consider a direct examination of cost changes pre- and post-merger useful in this particular context.

5. Exelon has brought with it to PHI a notable commitment to diversity and inclusion, both in "hard" measures" and in "soft" factors.

Diversity levels have increased and management continues to set and track goals for further increasing them. Diversity is measured across a broad range of aspects regularly and at a level that holds leadership of each function accountable for making advances. Thinking about what constitutes "inclusion" has broadened over the years; Exelon's messaging and actions have kept pace, with gender equity and workplace tolerance key in that regard. Apart from clear procedures and measurements, which are strengths, management regularly works to ensure that its communications (both internal and external; both formal and informal) set a tone that not only encourages diversity and inclusion, but make clear that both, defined broadly, are firmly expected of all employees and representatives.

6. Centralization of labor relations has left a sufficient local presence and indicators of labor management performance have remained stable following the merger.

A local New Jersey labor management presence remains, with the function operating under an overall structure that promotes consistency, accountability, and efficiency.

D. Recommendations

Chapter XI, which addresses Staffing and Compensation, made recommendations that engage or have implications for Human Resources responsibilities and activities. This chapter, which addresses management, costs, and administration of the function, and a small number of specific topics found no basis for recommending changes.

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Chapter XI: Staffing and Compensation

A. Chapter Summary

Personnel who act at and for ACE operate under an unusually highly layered, but effective overall structure. As before the merger, the resources who design, construct, and operate the ACE network and who perform customer-facing functions work under the direction of PHISCo and PHI executive management. PHISCo dedicates many of them exclusively to work at or in support of ACE. Therefore, Exelon has largely left to more local management responsibility for and control of the same operational activities as resided with PHISCo before the merger. More significant change has occurred in the provision of corporate and support services, which, as planned and announced at the time of the merger, have become increasingly more consolidated at the Exelon level, with many resource and functions moving from PHISCo to EBSCo.

Exelon has brought to PHI a strong focus on performance effectiveness, using comprehensive performance benchmarking and a peer group process that brings to bear performance comparisons and best practices development and introduction across all Exelon operating utilities. However, with the need for resources to accomplish significant performance reliability and quality commitments and the post-merger adjustment period, Exelon has yet to place analysis and planning of resources on a strongly analytical footing that recognizes achievable gains in performance effectiveness and efficiency.

With reliability performance greatly improved and with Exelon now fully familiar with the physical, logistical, geographical, and policy environments in which ACE operates, it has become both timely and critical to complete efforts to assess the degree to which performance enhancements already identified and remaining under study support forward-looking staffing plans reflecting greater efficiencies. Management recognizes that significant opportunities exist at both ACE, PHISCo, and EBSCo levels and it has underway a number of efforts to crystalize and execute on them.

ACE and its stakeholders thus face a significant crossroads in rate-setting. A failure to reflect the reasonably substantial staffing efficiency gains achievable, threatens perpetuation of rates set on costs that will not be reflective of near-term efficiency gains. Thus, Exelon should promptly complete efforts to bring staffing into line with approaches and methods already or on the verge of identification. It is reasonable to expect, based on what leadership has advised to expect staffing cost gains of between five and ten percent.

Exelon has integrated its approach to and methods for establishing compensation with those used pre-merger by PHI. They are comprehensive, well-structured, targeted to appropriate market benchmarks, and effectively executed. There is an appropriate balance among base and incentive elements, differentiated by position grade in an industry-accepted manner. A well-structured performance management and measurement program drives annual compensation decisions.

Pension and OPEB (other post-employment benefits) costs have remained under control. Program funding has remained largely at pre-merger levels, exhibiting moderate increases in funding levels.

Management's benchmarking of benefits has produced varying results, but is of an age that justifies re-examination, particularly given its vintage.

B. Background

Staffing and compensation significantly influence a number of the elements of the RFP that began the process leading to this audit. Chapter VIII, *Merger Conditions*, examined compliance with conditions addressing the assignment of resources to New Jersey in support of reliable ACE operations. This chapter details and addresses:

- The levels of operating resources focused on and dedicated to the ACE network, systems, and customers
- Plans to ensure that resources remain adequate, considering recruitment and development needs
- Changes in resource levels since the merger with Exelon. This chapter also addresses the structure and competitiveness of compensation and benefits.

We examined planning for and levels of staffing of the organizations having roles in ACE management and operations. We did so in light of the need to ensure sufficient staffing and capital to meet Exelon merger commitments addressing service reliability maintenance and improvement. Chapter V, *Capital Allocation* and Chapter VI, *Focused Operations Review* address, respectively, the provision of capital and reliability maintenance and improvement measures and results. This chapter addresses staffing generally and as applied in meeting merger commitments.

PHI proposed in September 2016 to integrate nearly all PHISCo employees into Exelon's service company (EBSCo), recognizing that commitments to separate PHI officers precluded total integration. Ultimately, the approach chosen left within PHISCo those functions more closely associated with utility operations, leaving functions more traditionally classified as "corporate support" subject to consolidation into EBSCo. The more complete transfer proposed by Exelon would have moved some 1,800 employees from PHISCo to EBSCo, while PHI estimated that the more limited, ultimately selected plan would move 300 PHISCo employees to EBSCo. This more limited alternative plan was expected to produce limited or no: (a) asset transfers from PHISCo, or (b) PHISCo cost-allocation methods changes.

Exelon employs what has been termed a "Govern, Oversee, Support, Perform" (GOSP) approach to conducting its businesses. This approach has produced a fairly complex staffing structure that, while not diminishing the importance of ACE to overall performance, leaves fairly little for which ACE-dedicated (as opposed to PHISCo) executives or senior managers have primary accountability or responsibility.

Governance in the traditional system largely comes from Exelon's parent board and senior executive leadership, with important elements delegated to the PHI level in conformity with merger obligations. As Exelon uses the term in this construct, however, governance has a broader application. It extends to overall control of the two major lines of Exelon business. Oversight as it applies to the utility business resides centrally at Exelon Utilities, which designs and employs a number of planning, budgeting, performance measurement, and common performance standards, methods, and practices. Support as it relates to ACE comes primarily from PHISCo and EBSCo.

The service companies, particularly PHISCo also conduct performance directly, using in many operations and customer service activities personnel dedicated solely or largely to ACE.

Within this complex structure, seven categories of resource types conduct or support activities bearing on the provision of electric utility service to ACE customers. To whom these resource types report and the entities they serve drive this categorization into seven groups:

- ***ACE Operations*** - - resources dedicated to ACE, managed under the overall direction of the PHI Chief Operating Officer and PHISCo (which also served as the pre-Exelon-merger service company for PHI)
- ***PHISCo Technical*** - - resources operating under common direction by PHISCo, organized to support all three legacy PHI utilities (ACE, Delmarva, Pepco) - - some focusing solely or predominantly on a single utility, but most working across PHI-utility lines
- ***PHISCo Customer Operations*** - - resources structured similarly to the technical resources just described
- ***PHISCo Corporate and Support*** - - services provided by PHISCo personnel, serving only the PHI utilities
- Corporate and support services provided by EBSCo personnel, organized in three fashions:
    - ***Exelon-Wide EBSCo*** - - services from EBSCo personnel reporting solely to EBSCo management and generally supporting multiple Exelon utility and non-utility entities
    - ***Exelon Utilities EBSCo*** - - services from EBSCo personnel reporting solely to EBSCo and supporting only Exelon Utilities (*i.e.*, excluding non-utility) entities
    - ***EBSCo Embedded at PHISCo*** - - services assigned to PHISCo departments, taking substantive direction from EBSCo management, but working solely for and in close, daily alignment with PHI executive management and PHISCo functions serving only PHI utilities.

We began with an identification of resource levels and changes in them. We looked at how management plans and controls the numbers and functions, including outside resources used. We looked at how management gauges the effectiveness of its resources.

C. Findings - - Staffing

1. Staffing Planning and Control

Through 2014, PHI incorporated human resource planning into its annual strategic planning process. Following the establishment of overall PHI direction and the alignment of line of business goals to support it, the development of workforce assumptions began in February, and continued into June. These assumptions considered retirement eligibility and historical attrition data provided by HR's Talent Strategy & Workforce Planning group. HR Relationship Managers worked with leaders of the business units responsible for staffing planning to interpret the data, and develop Work Force Plans for submission with proposed budgets in October. With budgets set, business area leaders then went on to develop their department operating plans for the year.

Personnel costs comprise the greatest part of operating costs for most functions. Current management describes the pre-merger budgeting practice as cost-driven, with staffing inputs to budget development inconsistently applied and not governed by clear guidelines. Correspondingly, monitoring variances through the year focused on overall conformity to budgets, not to approved versus actual personnel complements. The post-merger approach monitors and controls variations in staffing levels (as compared with approved complements), even if overall spending remains within the involved work group budgets.

The current personnel planning process follows the same calendar and methods at each of the Exelon utilities. Its full implementation at PHI has come recently, following the change from SAP to Oracle's ePeople platform, which occurred in December 2017. Human Resources uses the new system's capabilities to generate a "PHI Headcount Review" distributed to the full executive team. It tracks authorized, filled, and vacant position numbers and percentages down to the level where business area leaders set budgets. Historical data about PHI staffing at the detailed level begins with 2017. Even retrieval of that data exhibits some problems, given the transition to the new Oracle based system.

As new system use continues, the development of longer trend lines will provide a stronger analytical foundation for assessing resource needs relative to turnover expectations. Exelon Human Resources personnel embedded at PHI, working closely with PHI Financial Planning and Analysis, use the headcount information to work with business area leaders to develop headcount budgets for each function, department, or area that forms budgets. The process promotes and requires consensus among all three sources about approved headcounts.

Prior to the merger, PHI did not base staffing on a strong analytical approach to determining required resources. Following the merger, such an approach did not arise either, with management choosing to defer employing such an approach while it became familiar with PHI circumstances, stakeholder expectations, and methods. Pending development of better knowledge from which to plan, management adopted a strategy (which continued through 2018) of holding total approved staffing levels flat to date, and projects a continuation of that approach for some time into the future.

Approved headcounts comprise a separate budget element monitored monthly. A notable demonstration of the Exelon focus on controlling headcount shows in the KPIs regularly monitored each month, including total headcount. PHI Human Resources "owns" this measure, making it responsible for ensuring control of people numbers. Locating responsibility at this level demonstrates the particular focus Exelon places on headcount control - - a significant departure from the pre-merger approach at PHI.

Exelon Human Resources management embedded at the PHI level tracks headcount at the department or functional level monthly, reports on it and takes responsibility for it in the MRM process, and meets monthly with PHI Financial Planning and Analysis and operations leadership to address headcount, among other human resource issues. Keeping headcount from exceeding set levels comprises one of the key metrics used by Exelon to measure operating utility performance. Regular measurement of PHI headcount by group and in total has occurred since late 2017, with reports to the PHISCo executive team. Current management considers this control a material improvement given the historical PHI approach of controlling headcount indirectly - - in measuring overall cost performance versus budget.

Exelon Human Resources management embedded at PHISCo monitor not just additions to headcount, but refilling of positions that become vacant through departures as well. Each such replacement requires the same justification as the filling of an approved position that has remained open. Somewhat high vacancy rates have existed at PHI positions in 2017 and 2018. Maintaining them at higher than typical rates reflects management's desire to preserve an "opportunity" for bringing resources down to levels more reflective of what efficient structure, procedures, methods, and activities are expected to require as the integration of PHI into Exelon matures. Observing a less "lean" structure at PHI, Human Resources management has challenged PHI leadership to make changes as soon as the end of 2018.

Human Resources produces a PHI Staffing Headcount each month, circulating it to the PHI executive team and to HR Operations personnel embedded at the PHI entities. Regular monthly reporting shows variations between approved and actual complements, and tracks vacancy rates at the detailed level. Monthly meetings review staffing. We encountered a common belief among management that opportunities exist to reduce staffing at PHI (inclusive of the customer and network resources comprising the bulk of personnel dedicated to ACE work). Pending continuing efforts to isolate and pursue opportunities for greater efficiency, management has maintained tight control of headcount at PHISCO and at ACE, principally by keeping vacancy rates at fairly significant levels.

Management has not performed or contracted for benchmarking or comparisons of PHI staffing with outside entities since at least a number of years before the merger. However, Exelon makes a regular practice of comparing staffing among its utility operations. The first effort of this type involving PHI operations came in connection with the merger. Exelon management internally benchmarked PHI staffing levels against those of Exelon generally (using an outside consultant and its data), employing the results to align staffing levels and job descriptions among the utilities.

2. Resources Dedicated to ACE and the Other PHI Utilities

Before the merger with Exelon, PHI employed, for a utility holding company, a comparatively large degree of centrally-managed (by PHISCo) resources. Old PHI dedicated large numbers of operations and customer-service personnel solely or predominantly to ACE operations, but nevertheless managed them through PHISCo. This approach to operations, field, and customer-service staffing has largely remained, as has the PHISCo management role with respect to personnel serving ACE. A number of corporate and support services formerly provided by PHISCo now reside at the Exelon level, managed by EBSCo. In addition, resources under the direction of Exelon Utilities leadership provide planning, standards development, performance measurement and enhancement, and other guidance and support to all Exelon utility operations.

Thus, the legacy PHI utilities:

- Have continued to draw almost exclusively from PHISCo-managed resources for operating (infrastructure planning, design, engineering, maintenance, and operation) and customer service functions
- Take corporate and support services from a combination of EBSCo and PHISCo sources, in accord with a service-company consolidation strategy largely intact since the merger.

Measurement of PHI-provided resources to ACE on a direct basis (by full-time equivalents, or FTEs) is not possible at the overall level. As we will describe, one can capture numbers more directly for operations personnel dedicated by PHISCo solely to ACE work. At the overall level, dollar charges by service companies reflects the best means for gaining insight into the numbers of resources supporting the individual operating companies. ACE experienced increasing amounts of costs from PHISCo in the years preceding the merger, as the next table summarizes. The percentage share of each PHI utility remained stable in that period. However, the annual increases of 16 and 8 percent in ACE costs from PHISCo were substantial.

Historical Shares of PHISCo Costs to PHI Utilities

YEAR	ACE		Delmarva		PEPCO	
2014	$123,790,880	24.4%	$162,964,920	32.1%	$220,359,512	43.5%
2015	$143,309,753	25.5%	$179,214,534	31.9%	$239,810,349	42.6%
2016	$155,313,775	25.4%	$193,609,128	31.6%	$263,235,465	43.0%

Exelon announced the pendency of the merger with PHI in April 2014. Pre-merger anticipation and preparation included limits on resources changes and a hiatus in forward-looking assessments of staffing needs. The resulting short-term focus significantly affected staffing for the approximately two years it took for the merger to receive the final required public service commission approval (by the District of Columbia Public Service Commission). One can, however, also use total service-company resources as a proxy for change in ACE resources. The usefulness of this proxy arises from the fact that ACE bore under old PHI and continues to bear post-merger fairly consistent year over year shares of the costs of service company resources. We frequently use that proxy below in assessing pre-and post-merger staffing changes.

Under Exelon's stewardship, a new headcount and complement classification and control process began in December 2016. Described below, it reflected the additional layering of support for PHI-level services produced by adding EBSCo as a common service provider. Many employees providing services by PHISCo to ACE take direction from the EBSCo level, but have been "embedded" at PHISCo, to whose operations and those of its utilities they are dedicated. Management has also dedicated many field and customer service resources to ACE alone (and to the other PHI utilities as well), but they take direction from PHISCo, under the overall direction of PHISCo's COO. The COO's direct reports who manage the activities of these resources include:

- Vice President, Electric & Gas Operations
- Vice President, Transmission & Substation
- Director, Project & Contract Management
- Vice President, Technical Services
- Vice President, Support Services
- Vice President, Customer Operations.

We finished field work on our audit of Pepco for the District of Columbia Public Service Commission in early 2014. At that time, PHI had underway a major, "Organization Review Project" begun in 2010 to examine processes and reduce staffing resources. This project led to large reductions in support staff, streamlining of executive positions and realignment of organizations under them. A key source of the change from the project came with transfers of utility personnel to the Power Delivery organization centralized under PHISCo. These transfers involved resources directly associated with planning, operating, and maintaining the three PHI utilities' networks and systems. PHI's disposition of the bulk of its non-utility businesses served as a primary stimulus of the Organization Review Project. Service company personnel numbered 1,668 in 2013. Management had formally undertaken a "freeze" approach for the several years preceding our work - - an approach that we found still in effect, practically speaking, as we completed our audit work.

The next chart shows resource levels, beginning with 2015. Different measurement bases used by PHI before the merger cloud direct comparisons, but the overall levels shown in the chart remain useful for overall comparison purposes. Key categories of the table include:

- ***"ACE Distribution"*** - - an ACE-dedicated sub-group of PHISCo's electric and gas operations resources, operating under the overall direction of the Vice President, Electric & Gas Operations, focusing on the distribution system. A separate Vice President does the same for transmission and substation facilities, but on a PHI-wide basis. ACE Distribution personnel number about 390, including less than 10 contracted resources.
- ***"PHISCo Technical"*** groups - - operating under the Vice President Technical Services, provide a range of technical and other services needed to produce and operate effective network infrastructure. Examples of these technical services include network planning, budgeting, design, engineering, project management, construction management, construction, asset management, inspection, maintenance, contractor management, and operations. The Director, Projects & Contract Management also provides technical services generally in project management. PHI-wide, PHISCo technical services employees number close to 1,240, counting about 250 contracted personnel.
- ***"Customer Operations"*** - - perform customer facing operations (*e.g.*, metering, billing, customer contact) addressed in Chapter XV.
- ***"PHISCo Corporate and Support"*** - - resources include the office of the PHI CEO and the groups providing government and external affairs, regulatory affairs, and a variety of support services. Their combined staffing of close to 470 includes about 20 contracted resources.
- "***EBSCo-Embedded"*** - - about 250 personnel (including about 10 contracted positions), serving in functions essentially moved from PHI to the EBSCo level - - controller, communications, finance, human resources, legal, and supply chain.

The next table summarizes employee headcounts and changes in them in recent years. The changes in structure and location following the merger make one-to-one resource comparisons at the functional level impracticable.

Management does not account for resources functioning in the other two ways that involved ACE (**"*Exelon-Wide EBSCo"*** and "***Exelon Utilities EBSCo"***) as part of PHI headcount. They "hit the books" of PHI and in turn ACE as costs. We discuss them below. The next table summarizes the changes in internal staffing dedicated fully to PHI operations; *i.e.*, excluding these two Exelon categories, but including *EBSCo-Embedded* personnel. It also excludes approximately 280

Information Technology personnel moved entirely from *EBSCo-Embedded* to *Exelon-Wide EBSCo* status in 2018.

The next table charts staffing at PHI commencing with the post-merger "Day One." The chart shows numbers of full-time equivalent personnel. The actual numbers have changed, while authorized numbers have not, remaining at 4,501 for 2016 through 2019. The beginning of the new headcount tracking basis allows resource comparisons with 2015 levels only at the total PHI level. The 2015 data shown in the preceding table subtracts the approximately 440 people PHI then used to support and conduct operations at its principal non-utility business - - Potomac Electric Services. Measured from 2016 levels, operations and technical services personnel have increased by about 100 from 2016 levels, with *ACE Distribution* alone accounting for half that increase. By contrast, both *PHISCo Corporate and Support* and *EBSCo-Embedded* personnel have dropped by about 70 combined.

Personnel numbers for 2017 reflect the results of management's first post-merger assessment of resource needs. Factors driving that assessment included recognitions of the need for a significant increase from the actual levels existing at merger close in the first two groups, Electric & Gas Operations and PHISCo Technical Services. However, management has since 2016 continued to use a total headcount authorization of 4,501, and will apply that same number in 2019.

Changes in PHI-Dedicated Staffing

Work Group	2016	2017	2018	2016v2018 #	2016v2018 %
Elecric & Gas Operations					
COO Office	3	2	2	(1)	-33.3%
Operations Office	8	3	5	(3)	-37.5%
ACE Electric Operations	**325**	**380**	**383**	58	17.8%
Delmarva Electric Ops	429	470	458	29	6.8%
Pepco Electric Ops	687	716	681	(6)	-0.9%
Control Center Ops	174	181	182	8	4.6%
Gas Operations	149	164	157	8	5.4%
Subtotal	*1,775*	*1,916*	*1,868*	*93*	5.2%
PHISCo Technical Services					
Transmission & Substation	631	691	676	45	7.1%
Technical Services	221	247	239	18	8.1%
Project & Contract Mgmt.	64	77	72	8	12.5%
Subtotal	*916*	*1,015*	*987*	71	7.8%
Customer Operations					
Subtotal	*680*	*657*	*628*	(52)	-7.6%
Corporate Support from PHISCo					
CEO Office	9	8	8	(1)	-11.1%
Gov. & Ext Affairs	109	98	90	(19)	-17.4%
Regulatory Affairs	106	104	97	(9)	-8.5%
Support Services	262	271	261	(1)	-0.4%
Utility of the Future	0	4	12	12	***
Subtotal	*486*	*485*	*468*	(18)	-3.7%
PHI Total Internal	***3,857***	***4,073***	***3,951***	***94***	**2.4%**
Corporate Support from EBSCo Embedded at PHI					
Controller	58	60	46	(12)	-20.7%
Corp. Communications	13	16	16	3	23.1%
Finance	52	44	43	(9)	-17.3%
Human Resources Ops	53	40	24	(29)	-54.7%
Legal	20	19	20	0	0.0%
Supply Chain	113	109	106	(7)	-6.2%
Embedded Subtotal	*309*	*288*	*255*	(54)	-17.5%
Total PHI - Pre IT	**4,166**	**4,361**	**4,206**	**40**	1%
Information Technology[1]	285	257	***257***	(28)	-9.8%
PHI Total Post-IT	**4,451**	**4,618**	**4,463**	12	0.3%
Augments and Other[2]	N/A	391	494		
Total with Augments	***4,451***	***5,009***	***4,957***		
Change from Prior Year	***(293)***	***556***	***(52)***		

[1]2018 Assumes 2017 IT Levels

[2]Other Added to Conform Totals DR Responses

The chart treats IT personnel separately, because their organizational "location" has changed several times. Beginning within PHISCo, they moved after the merger to fall under EBSCo direction, but remained embedded at PHISCo. This embedment ended in 2018 when they became directly managed by and organizationally "located" within EBSCo. Operations and technical support personnel have increased by about 100 since 2016, while corporate and support personnel (PHISCo and EBSCo-embedded) have dropped by about 70.

The preceding chart excludes what Exelon terms "augments" (contracted versus employed personnel supplementing the employee numbers shown). These contracted resources numbered about 390, dropping by approximately 100 by 2018. Their post-merger use has come predominantly in field inspection, maintenance, operations, and construction and in the planning, engineering, design, and program/project management functions supporting them. Exelon merger commitments drove much operations capital and O&M work in this period, thus producing temporarily increased work levels. Outsider resources commonly fill such needs in the industry, given the relatively short duration (and often the types) of work involved.

Moreover, as we explain further below, post-merger leadership of PHISCo recognized that it would require some time to gain a robust understanding of work-methods changes in PHI utility workforce productivity, and geographic and jurisdictional determinants of work requirements. The lack of this understanding, particularly at a time of significant reliability commitments, also contributed to a general preference for using short-term resources. Nevertheless, as the Merger Commitments chapter addresses, the required levels of internal New Jersey resources have been achieved and maintained.

In any event, augments in operations and technical areas accounted for well over 80 percent of the total outsiders (327 in 2017 and 286 in 2018). Chapter VI, *Focused Operations Review*, describes the ACE reliability improvement programs that have driven a great deal of the need for outside resources. Work at ACE accounts for a large share of the use of outside resources, a common industry approach to major construction and temporary inspection and maintenance programs.

Management believes and has expressed to us confidence that material opportunities to improve the efficiency of work performed by and for PHI exist, based on observations made to date about how and how well PHISCo-managed resources perform. Exelon has since the merger sought and introduced base improvements to bring PHI operations more in line with other Exelon utility methods and levels of efficiency. Exelon has underway system-wide searches for efficiency and effectiveness improvements (discussed in following subsections of this chapter). Management has identified significant opportunities, now under study and in many cases development, in both operations functions in the field and in corporate and support services in its back offices.

Significant vacancy rates from approved levels have continued, increasing from 2017's three percent to seven percent in 2018, measured against the static numbers of approved positions overall. Throughout this period, approved PHISCo staffing levels have remained at 4,501.

Human Resources management cites the use of substantial vacancy rates as a means of managing headcount, pending continuing efforts to establish a stronger analytical foundation for planning PHISCo's field and other headcount (including *ACE Distribution*), which management considers likely to produce reductions in total resources required in the future.

3. EBSCo Resources and Costs

The numbers of personnel above include those individuals embedded for full-time work on behalf of the PHI utilities. Determining their numbers therefore became relatively straightforward, beginning with the December 2016 initiation of the headcount management approach that remains in use. We could not, however, secure information permitting a calculation of equivalent numbers of other EBSCo personnel serving PHISCo and ACE. They work for multiple affiliate “customers” or “clients.” EBSCo does not calculate FTE equivalents for work charged, therefore producing a lack of information about the EBSCo headcount dedicated to PHI, PHISCo, or ACE efforts.

Without a data source for determining the effective number of full-time equivalents, dollars, not headcount, emerged as the best available means to assess EBSCo resource levels working for and charged to ACE. Total EBSCo costs expended to serve all internal “clients” have grown to $1.82 billion by 2017. The next chart shows EBSCo’s 2018 staffing of almost 3,300. Not all EBSCo costs are compensation-related, but the figures show that dividing EBSCo’s total costs by its personnel numbers produces a per-employee cost in the range of $500,000 per year.

2018 EBSCo Staffing

Practice Area	No.	Practice Area	No.
Information Technology	1,540	Communications & Public Affairs	39
Supply	564	Gov't. Affairs & Public Policy	33
Finance	329	Transportation - Operations	32
Corporate Security	202	Risk	30
Human Resources	187	Real Estate Services	24
Legal & Governance	134	Corporate Development	22
Exelon Utilities	83	Executive Services	19
Corp Strategy & Exelon 2020	45	Investments	15
Total		**3,298**	

The next table summarizes combined PHISCo and EBSCo charges to the PHI utilities. Charges from EBSCo began in March 2016, making 2017 the first to reflect a full year of charges. The 2017 data show net reduction in combined PHISCo and EBSCo charges. The data also show little variation between the shares of PHI utility costs from PHISCo and EBSCo.

PHISCo/EBSCo Costs to PHI Utilities

Charges by PHISCo				
	2017		**2016**	
To Utilities	**$**	**%**	**$**	**%**
ACE	$135,410,920	26.1%	$155,269,158	25.4%
Delmarva	$165,063,491	31.8%	$193,609,128	31.6%
Pepco	$219,018,530	42.2%	$263,235,465	43.0%
Utility Total	**$519,492,941**	**100.0%**	**$612,113,751**	**100%**
Charges by EBSCo				
ACE	$34,371,127	23.0%	$15,390,761	23.4%
Delmarva	$42,809,378	28.7%	$18,894,560	28.8%
Pepco	$72,161,173	48.3%	$31,370,546	47.8%
Total	**$149,341,678**	**100.0%**	**$65,655,867**	**100.0%**
Combined PHISCo and EBSCo Charges				
ACE	$169,782,047	25.4%	$170,659,919	25.2%
Delmarva	$207,872,869	31.1%	$212,503,688	31.4%
Pepco	$291,179,703	43.5%	$294,606,011	43.5%
Total	**$668,834,619**	**100.0%**	**$677,769,618**	**100.0%**

Charges to ACE from EBSCo (which include Exelon-level executives) more than doubled over the two years, but remained a very small portion of total EBSCo costs (0.9 percent in 2016 and 1.9 percent in 2017). This increase has come as Exelon has consolidated more activities at EBSCo. For example, the largest two areas of consolidation at the EBSCo level (Information Technology and Finance) accounted for more than three quarters ($14.4 of $18.9 million) of the increase. The next chart summarizes these EBSCo charges, expected to increase in 2019 as consolidation has continued.

EBSCo Charges to ACE

EBSC Practice Area	**2016**		**2017**		**Total Change**	**ACE Change**
	Total	**ACE**	**Total**	**ACE**		
Information Technology	$887,318,486	$2,952,494	$1,076,100,282	$15,391,827	21%	421%
Finance	$195,307,609	$4,104,283	$196,678,186	$6,084,939	1%	48%
Exelon Utilities	$52,312,415	$1,391,658	$55,139,756	$2,288,541	5%	64%
Executive Services	$84,385,868	$1,575,251	$81,611,063	$2,132,662	-3%	35%
Supply Services	$100,001,324	$741,546	$103,324,669	$1,546,097	3%	108%
Communications	$36,991,459	$571,540	$55,900,231	$1,344,482	51%	135%
Legal Services	$35,454,294	$960,875	$33,277,248	$1,252,780	-6%	30%
Human Resouces	$65,808,852	$723,785	$73,185,680	$1,167,468	11%	61%
Reg. & Gov. Affairs	$26,168,241	$527,747	$33,823,674	$863,152	29%	64%
Corporate Strategy	$35,563,537	$604,242	$32,466,013	$853,093	-9%	41%
Corporate SLA	$9,202,108	$192,333	$21,895,076	$357,302	138%	86%
General Counsel	$13,158,086	$208,983	$14,581,921	$351,770	11%	68%
Corporate Secretary	$9,729,415	$182,398	$9,301,575	$240,111	-4%	32%
Real Estate	$3,757,907	$9,038	$3,506,745	$366	-7%	-96%
Corporate Development	$37,274,651	$167,748	$21,295,733	$288,858	*15%*	*130%*
Investment	$2,398,724	$36,869	$3,209,886	$63,108		
Commercial Ops Group	$2,352,162	-$18,788	$6,850,889	$51,468		
Gen Company Activities	$47,723,041	$458,761	-$414,017	$39,104		
Grand Total	***$1,644,908,180***	***$15,390,761***	***$1,821,734,610***	***$34,317,127***		

Exelon planned and has since the merger with PHI undertaken significant consolidation of corporate and support functions. Core network and customer operations remain, as they did before the merger managed and staffed at the PHI level, with substantial resources, while operating under PHISCo management, dedicated to ACE network- and customer-related activities. The consolidation occurring since the merger has focused, as planned on corporate and support functions provided by the two service companies involved - - PHISCo for PHI and EBSCo for Exelon. The next table summarizes changes in costs borne overall by PHI for such services, reflecting movement of resources and costs between PHISCo and EBSCo organizations since the merger. Staffing drives the bulk of these corporate and support function costs. Costs directly associated with personnel numbers include wages, salaries, incentives, benefits, taxes, pensions and other post-employment benefits. These costs account for close to half (60 percent when excluding asset-heavy functions like information technology, vehicles, real estate) of the total costs of the PHISCo portions of the costs shown in the next table.

The next table shows the changes in EBSCo charges to PHI entities from 2016 to 2017.

2016-2017 Changes in EBSCo Charges to PHI Entities

Entity	2017	2016	Change	
			Dollars	Percent
ACE	$34,317,127	$15,390,761	$18,926,366	123%
DPL	$42,809,378	$18,894,560	$23,914,818	127%
PHI Hold Co	$7,953,122	$5,808,927	$2,144,195	37%
PHISCo	$33,439,808	$22,844,915	$10,594,893	46%
PEPCO	$72,161,173	$31,370,546	$40,790,627	130%
TOTAL	**$190,680,608**	**$94,309,709**	$96,370,899	102%

The next chart shows the changes to these charges by EBSCo department (differences are due to rounding).

Charges to PHI Entities by EBSCo Department

EBSCo Department	2017	2016	Change $	Change %
Commercial Operations Grp	$285,830	-$102,550	$388,380	379%
Communications	$7,553,508	$3,120,548	$4,432,960	142%
Corporate Development	$1,620,449	$915,601	$704,848	77%
Corporate Secretary	$1,344,660	$999,980	$344,680	34%
Corporate Strategy	$4,786,114	$3,297,323	$1,488,792	45%
Corporate SLA	$2,005,186	$1,049,788	$955,398	91%
Executive Services	$11,978,203	$8,809,298	$3,168,905	36%
Exelon Utilities	$15,685,848	$11,180,580	$4,505,268	40%
Finance	$36,617,855	$23,256,421	$13,361,433	57%
Generation Company Activities	$105,175	$2,506,609	-$2,401,435	-96%
General Counsel	$1,971,256	$1,140,665	$830,592	73%
Human Resources	$9,576,615	$6,169,328	$3,407,287	55%
Information Technology	$79,709,698	$20,287,591	$59,422,108	293%
Investment	$354,023	$201,220	$152,803	76%
Legal Services	$5,439,368	$4,623,936	$815,432	18%
Real Estate	$2,054	$49,331	-$47,276	-96%
Regulatory & Government Affairs	$4,841,296	$2,879,246	$1,962,050	68%
Supply Services	$6,803,469	$3,924,793	$2,878,676	73%
Grand Total	**$190,680,607**	**$94,309,707**	**$96,370,900**	**102%**

The next table shows how EBSCo charges to all affiliates have changed since 2015.

Changes in EBSCo Charges to All Exelon Entities

Entity	Year 2015	Year 2016	Year 2017	Change $	Change %
Atlantic City Electric	$0	$15,390,761	$34,317,127	$18,926,366	123%
Delmarva Power & Light	$0	$18,894,560	$42,809,378	$23,914,818	127%
Potomac Electric Power	$0	$31,370,546	$72,161,173	$40,790,627	130%
PHI Service Company	$0	$22,844,915	$33,439,808	$10,594,893	46%
Pepco Holdings	$0	$5,808,927	$7,953,122	$2,144,195	37%
Baltimore Gas & Electric	$146,233,852	$167,583,699	$206,236,942	$38,653,243	23%
Commonwealth Edison	$295,861,112	$339,771,942	$380,218,592	$40,446,650	12%
PECO Energy	$165,744,214	$200,624,737	$206,388,780	$5,764,043	3%
Exelon Corporation	$43,464,765	$51,819,918	$23,652,125	-$28,167,793	-54%
Other	$716,408,314	$790,798,637	$814,557,570	$23,758,933	3%
Total	$1,367,712,257	$1,644,908,642	$1,821,734,617	$176,825,975	11%
PHI Entities Total	$0	$94,309,709	$190,680,608	$190,680,608	202%
Other Entities Total	$1,367,712,257	$1,550,598,933	$1,631,054,009	$80,455,076	5%
PHI Utilities Shares of Total					
Atlantic City Electric	0.0%	0.9%	1.9%		
Delmarva Power & Light	0.0%	1.1%	2.3%		
Potomac Electric Power	0.0%	1.9%	4.0%		

The next table shows (in thousands of dollars) the recent history of combined charges to PHI from PHISCo and EBSCo for a range of functions and activities.

PHI-Wide Corporate and Support Services Recent Cost History

(All amounts above the "Totals" line are confidential)

Group	2014A	2015A	2016A	2017A	2018B
[redacted]					
Totals	$392,844	$386,772	$408,531	$405,040	$396,974
Change from Prior Year		-1.5%	5.6%	-0.9%	-2.0%
2014-2018 Change	*1.1%*	*2014-2018 Inflated at 2%*			*$425,227*
2015-2018 Change	*2.6%*	*2014-2018 Inflated at 2%*			*$410,446*
2016-2018 Change	*-2.8%*	*2014-2018 Inflated at 2%*			*$425,036*

The chart shows that, accounting for inflation, consolidation has yet to generate sizeable benefits. Inflation as measured by the consumer price index has averaged about 1.6 percent (using for 2018 the 2.3 percent for the 12-month period ended September). Producer price index inflation has been about 2 percent per year over a similar period.

4. Managing Service Company Effectiveness

We examined the approach and methods for addressing the effectiveness of staff performance at the corporate level. Exelon has introduced to the PHI utilities a comprehensive process for examining and enhancing performance effectiveness and efficiency - - both major drivers of personnel requirements. Exelon has brought to PHI a major change in measuring performance and in seeking means for improving it. What management terms the "Exelon Model" applies two central concepts for ensuring effective performance:

- A very broad set of operations performance metrics that management measures continuously to generate quantitative measures of performance used in setting goals, assessing performance at each Exelon utility, and comparing how each differs with respect to each measure

- A Peer Group process dedicated to identifying performance effectiveness and efficiency improvements and best practices to all six of Exelon's utilities - - ComEd in Chicago, PECO in Philadelphia, BGE in Baltimore, and the three legacy PHI operations.

a. Key Performance Indicators

Exelon utilities regularly measures performance against objective, quantified metrics covering 65 operational metrics. These measures are not only significant in their number and breadth of operational scope, but in how management uses them. Detailed reports of each utility operation's performance go to a broad audience. Top PHISCo leadership conducts broadly attended monthly meetings to review performance against them, identify gaps, consider experience by the other Exelon utilities, and make specific plans to close gaps. The reports have broad exposure to Exelon Utilities executives and management as well.

In querying a broad range of management about managing performance, they universally cited the measures, regular meetings to address them, and efforts to close gaps to goals as primary areas of focus. Exelon has succeeded in making quantitative measurement and inter-affiliate use of these indicators a well-understood, accepted, and respected basis for producing effective, efficient performance.

Monthly reports addressing each of these 65 KPIs make clear the identity of the executive accountable for them and specific quantitative goals. The reports show monthly values for each measure (table-presented values and graphs) and year-to-date performance against each goal. The reports also show projected year-end performance and how that performance will or will not conform to the established goal. This quantitative and graphic data is followed by a discussion of variances and the means for addressing them. The charts and graphs segregate performance and discussions of variances and actions by each PHI operating utility.

The next list shows the scope and depth of these measures:

- Organizational Effectiveness
  - Safety Best Practices Completed
  - OSHA Recordable Event Rate
  - Contractor OSHA Recordable Event Rate
  - OSHA DART (days away from work) Rate
  - OSHA Severity (lost days) Rate
  - Total Industrial Safety Accident Rate
  - Motor Vehicle Accident Frequency Rate
  - Responsible (at fault) Vehicle Accident Frequency Rate
  - Human Performance Incident (failures) Rate
  - Corrective Action Program Health Indicator (corrective actions overdue)
  - Staffing (Headcount)
- Operational Excellence - Network
  - SAIFI (IEEE 2.5 Beta)
  - SAIFI (All in – IEEE)

  - Vegetation-Related SAIFI
  - Bus Interruption Events
  - Distribution Bus Interruption Rate
  - Transmission Line Interruption Rate
  - CAIDI (IEEE 2.5 Beta)
  - CAIDI (All in – IEEE)
  - Vegetation-Related CAIDI
  - Percent of Customers with four or More Interruptions
  - Percent of Customers Experiencing Interruptions ≥4 hours
  - Percent of Customers Experiencing Interruptions ≥12 hours (all in 12-Month Rolling)
  - Dig-in Rate (Locator at Fault)
  - Electric Underground Damages Rate
  - Total Preventive Maintenance Items Completed
  - Preventive Maintenance Items Overdue
  - Pole Inspections Completed
  - Overdue Pole Inspections
  - All in Passport Backlog
  - Electric Corrective Maintenance Items Completed by Priority
  - Electric Corrective Maintenance Backlog by Priority
  - Vegetation Management - Distribution Percent Completed
  - Vegetation Management - Transmission Percent Completed
- Customer Service
  - Calls Answered within 30 Seconds
  - Agent Service Level
  - Percent of Calls Abandoned
  - Average Speed of Answer
  - Number of Calls per Customer
  - Agent Calls per Customer
  - Busy Out Rate
  - Response Time Agreement Percentage
  - Customer Channel Utilization Percentage
  - Percent of Meters Read
  - Customer Field Operations YTD Completed Work
  - Meter Corrective Maintenance Total Backlog
  - All in Customer Operations Backlog Number
  - Percent of Delayed Bills
- Compliance
  - Notices of Violation/Non-Compliance Events
  - Greenhouse Gas Net Emissions (Metric Tons)
  - SF6 Emissions Reported (Pounds)
  - Preventable NRC Reportable Spills
- IT
  - IT Critical Systems Unplanned Outages
  - IT Critical Systems Percent Availability
  - IT CIMS/CC&B/CRM&B Successful Service Delivery Percent
- Customer/Stakeholders Satisfaction

  - Customer Satisfaction Index - MSI Percent Positive
  - Customer Satisfaction Index - MSI Mean
  - Call Center Satisfaction Index
- NERC
  - NERC Compliance Monitoring Program Certifications
  - Externally Discovered NERC/RFC Compliance Violations
- Financial Discipline
  - Overtime (Millions of Dollars)
  - Tools for People (Total Service)
  - Uncollectible Expense Percentage of Revenue
  - Percent of Accounts Receivable >60 Days
  - Past Due Days Sales Outstanding

b. The Peer Group Process

The merger with Exelon has brought participation in a comprehensive, formally structured internal, best-practices process. The Exelon internal Peer Group process operates under governance, oversight, and support from a dedicated organization at the Exelon level. The process focuses on implementing best practices, on standardizing business equipment and systems, processes, metrics, and controlled documents, such as operating procedures, and on promoting knowledge transfer among the Exelon utilities.

It operates within a framework that seeks to move Exelon's utility operating companies into first-quartile operational and top-decile safety performance, while meeting financial goals. Its objective is to establish key roles, management controls, and standards that drive best practice sharing and implementation across all Exelon Utilities, in support of achieving and maintaining top quartile performance.

Two vice presidents, each reporting to the CEO of Exelon Utilities, have responsibility for the customer and infrastructure groupings of "Core Functions" into which Exelon has divided the Peer Group process.

An Exelon Utilities vice president oversees customer-focused Peer Groups established to address each of:

- Billing & Payment Processing
- Credit and Collections
- Customer Care
- Customer Experience
- Customer Solutions
- Meter Services

A second Exelon Utilities vice president oversees the remainder of the peer groups:

- Capacity Expansion
- Contracting Strategy
- Corrective Maintenance
- Facility Relocation
- Fleet Management
- Human Performance
- Innovation
- Liability and Claims
- New Business
- Operate and Restore
- Preventive Maintenance
- System Performance
- Real Estate
- Safety
- Training

- Design Configuration Control
- Environmental Strategy and Compliance
- Project and Work Management
- Workforce Productivity & Effectiveness
- Emergency Preparedness & Business Continuity

Each Peer Group consists of an Exelon Utilities level Corporate Functional Area Managers (CFAMs) and of a Utility Functional Area Manager (UFAM) from each of the utilities. The groups under the two vice presidents employ CFAMs on loan from the Exelon utilities - - four to cover the six customer groups and six to cover the 20 infrastructure groups. One of the CFAMs comes from PHI LLC.

The peer groups undertake a broad and extensive array of initiatives, which focus on a variety of opportunities to improve efficiency, standardization, service quality and reliability. The impressive range of initiatives addresses opportunities for improving customer service, customer program accessibility, IT and other system convergence, innovative technology use, forecasting and planning, capacity expansion, metering, environmental, maintenance, contracting, design, emergency preparedness, outage causation, service restoration, work management, productivity, training, fleet, safety, research and development, claims, and new business. The customer program for 2018 includes some 20 separate initiatives and the infrastructure program includes 130.

5. *Targeted Initiatives to Enhance Staffing Effectiveness*

PHI staffing predominantly comes from employees, supplemented by contracted personnel (augments). Total PHI staffing dropped by 203 (4.3 percent) from 2017 to mid-2018. Efforts are underway to improve staffing performance. Exelon began in 2017 a "Utility Efficiency Project". It involves a comparison of workloads, resources, and practices at each of the four Exelon utilities' electric and customer operations functions. The scope includes identifying best practices, gaps at each utility to those practices, and developing a "construct for ongoing justification of resource changes" in electric operations, customer operations, and support services. It has operated under the objective of finding efficiencies through reducing in work volumes, changing processes, and improving work efficiency. A 10 percent target has been established for electric and customer operations.

Work under this initiative has identified about 100 specific improvement opportunities identified, scoped, assigned to an executive sponsor, and scheduled for detailed examination and execution. Management has assigned an annual savings target to each. The amounts reflect combined savings for all the Exelon utilities. The savings combined to produce a total of $78 million combined for all the utilities, dominated by the following categories:

- Transmission & Substations: $25.23
- Technical Services: $21.52 million
- Maintenance & Operations: $12.97 million
- Customer Operations & Service: $9.88 million
- Support Services: $8.02 million.

ACE represents about six percent of Exelon Utilities' operations, as measured by customer numbers. Given commonly expressed views about the relative state of PHI utility performance levels, it is reasonable to expect a higher proportionate level of savings in resources working for or in support of ACE in these areas overall.

The elements that Exelon defines as its "Management Model" continue to rely on such alignment for a number of purposes involving all four of its utilities (focusing on operations), among them: (a) comparing resource levels and other measures of efficiency and effectiveness among them, (b) promoting the development of common procedures and methods incorporating the best practices among them, (c) promoting transfer of resources (particularly in system emergencies) among them, and (d) providing an enlarged base of succession candidates available to them.

Management also has not, at the more general, service-company level, undertaken since 2014 any internal or external studies, analyses, examinations, reports, or other documented reviews of the competitiveness of services provided by PHISCo and, since the merger, by EBSCo. However, the EBSCo transformation effort now underway (discussed below) did begin with some cost benchmarking of functions, seeking to produce an identification of work streams and practices that may present opportunities to improve the efficiency with which the service company performs corporate service functions for PHI and others.

The yearly processes required by the agreements with the service companies comprise the principal measure for determining whether and to what extent EBSCo and PHISCo remain the optimum ways for serving PHI. The high degree of centralization of management and resources under PHISCo would make consideration of ACE-alone alternatives academic at best. We have, as a result of the collective and broad examinations undertaken as part of this management audit, not observed more than limited ways for distinct ACE functions. PHISCo already dedicates large numbers of resources in operations areas (see Chapters VI and XVII). We address the other principal area where we see a more distinct role for ACE-dedicated resources (top ACE officer and local external affairs) in Chapter IX.

Exelon has engaged in a year-long EBSCo "Transformation Initiative" that seeks to improve over a five-year implementation period the service company's efficiency, lower its cost structure, and adopt a "sustainable cost management and accountability framework." The scope of the initiative includes Finance, Human Resources, Information Technology, Supply, Security, Real Estate, Facilities, Risk, Corporate Strategy and Development, and Communications. The first half of the year focused on readily implementable savings opportunities, with work in the second half addressing those requiring more pre-implementation analysis and design. Exelon will incorporate the opportunities selected into its long-range planning process, supporting them with implementation plans approved by Exelon's Executive Committee. Management expected the cost management and accountability framework work to continue through 2018.

The EBSCo business transformation process underway has included a broad look at why, where, how, and how much the service company works on behalf of the full range of Exelon entities, including PHI. That effort grew in significant part from a desire by the Exelon CEO to extend to service company functions the application of objective measures to assess performance effectiveness and efficiency, including costs. It began with a benchmarking of costs and practices at other utility holding companies, supported by the expertise and data of a firm with a strong domestic utility practice, complemented by broad industry experience both nationally and internationally.

D. Conclusions - - Staffing

1. The post-merger organization of activities and resources for the planning, design, and operations activities continues largely under PHISCo, leaving control of them essentially as "close" to ACE as did pre-merger conditions.

Exelon has been consolidating corporate and support services in accord with plans in existence since the merger. It has done so in accordance with merger commitments. Exelon has largely left network and customer planning, design, construction, and operation under PHISCo management, where they resided before the merger. ACE dedicated resources, operating under PHISCo management remain and they have grown in operations areas affected by merger commitments. Control of these aspects of ACE operations remains largely as they existed prior to the Exelon merger.

2. Exelon has brought to PHISCo and to ACE a strong focus on performance effectiveness and improvement.

The Exelon management model, in particular its comprehensive and structured approaches to performance metrics and performance improvement through the peer group process encourage efficiency and effectiveness. They bring to ACE and PHISCo exposure to best practices from across Exelon's operating utilities and a culture that promotes accountability and responsibility through measurement and comparison of performance across a broad range of areas. The recent extension of this approach to EBSCo, through the business "transformation' has begun: (a) a close examination of how corporate and support services measure their effectiveness, (b) development of a comprehensive set of metrics akin to those already used primarily at the operating level, and (c) most significantly for ACE, an effort to reduce resource levels required to sustain effective service to the entities served by EBSCo.

These aspects of Exelon's focus on performance effectiveness comprise, in our experience, very notable strengths, and promise long-term optimization of performance at both the operating and service company levels.

3. Nevertheless, PHISCo has yet to make substantial progress in the resource reductions that management acknowledges as available. *(See Recommendation #1)*

Senior management acknowledged the availability of opportunities to make substantial reductions in resource levels. However, the need to develop a sound knowledge of the PHI utility systems, structures, practices, resources, and environments (physical, regulatory, and policy), combined with the need to execute on substantial reliability, service, and employment commitments, has made the exploitation of those opportunities an area of secondary priority.

Chapter VI, *Focused Operations Review*, explains the strong success in reaching such goals, and addresses the need for leadership to fundamentally re-examine strategy in the affected areas. Moreover, any "getting acquainted" phase of the Exelon/PHI relationship is now past.

PHISCo leadership, with support and strong oversight from top Exelon Utilities executives, needs to move from its more reactive headcount and vacancy control staffing planning approach to a strongly analytical approach that examines staffing locations and numbers on the basis of forecasted work requirements. That approach needs to consider achievable enhancements to PHISCo/ACE practices - - not those employed to date.

Exelon has completed or has underway methods enhancements that can reasonably be expected to produce efficiencies in PHISCo in excess of five percent. With important rate-setting proceedings at hand, we consider it critical that a forward-looking level of resource requirements be established and used as a foundation.

4. Increased consolidation of corporate and many support activities at the EBSCo level promises material gains in effectiveness and efficiency.

A merger such as the one between Exelon and PHI should be expected to produce for PHISCo, and in turn ACE, material efficiency gains from consolidation of corporate and support services. Moreover, top Exelon management believes that, beyond synergies produced by consolidation, EBSCo can perform more effectively and efficiently.

5. Nevertheless, significant work remains in producing the economies expected to result from consolidation. *(See Recommendation #1)*

With the EBSCo business transformation effort well underway in 2018, it is reasonable to expect substantial improvement in cost this year. Savings of 10 percent in EBSCo total costs appear to set a reasonable target for those expectations, at least insofar as PHISCo is concerned. We would expect proportionately greater savings to PHISCo than to the other Exelon entities, which already had the benefit of much greater size "leverage" prior to the merger.

E. Recommendations - - Staffing

1. Promptly complete the work needed to provide strongly founded resources plans for PHISCo and EBSCo and provide resource alignment, numbers, and costs based upon realistically achievable efficiency gains. *(See Conclusions #3 & #5)*

At each of the ACE, PHISCo, and EBSCo levels, leadership has acknowledged the ability to make sizeable gains in the effectiveness and efficiency of resources employed directly for and in support of ACE management and operations. The ability that management has to produce material reductions in resources makes current actual and approved staffing numbers poor predictors of short-term personnel requirements.

The next chart and the observations of management create potentially significant implications for near-term staffing at and in support of PHI.

PHI Staffing Trends and Potential Implications

Year vs. Year Historical Ratios						
Comparison	**2018 v.s 2015**		**2018 v.s 2017**		**2019 v.s 2018**	
	#	*%*	*#*	*%*	*#*	*%*
Approved Employees	not available		0	0.00%	0	0.00%
Actual Employees	(538)	-11.3%	(410)	-8.9%	not available	
Augments	not available		(50)	-13.5%	not available	
Total FTEs	not available		(203)	-4.3%	not available	
Historical Approved/Actual Employee Ratios						
2015 & 2019 data not available	**2019***	**2018**		**2017**		**2015***
		(295)	-6.6%	(142)	-3.2%	
Possible Projections of 2019 Resources from 2018 and 2017						
Scenario 1: Employees -5%, Augments -10%						
Category			*#*		*%*	
2019 Employees			3,996		-5.0%	
2019 Augments			288		-10.0%	
2019 Total			4,284			
Total Change from 2018			(242)		-5.4%	
Total Change from 2017			(445)		-9.3%	
Scenario 2: Employees -3%, Augments -5%						
Category			*#*		*%*	
2019 Employees			4,080		-5.0%	
2019 Augments			304		-10.0%	
2019 Total			4,384			
Total Change from 2018			(142)		-3.1%	
Total Change from 2017			(345)		-7.3%	

Management responded to our question about structured reviews of resource levels since 2014 with a general response citing an ongoing effort to review organization structure and resource levels, considering other Exelon utilities practices and the environments in which they apply them. That assessment effort remained under way at the time of our field work, with planning and execution of any analytically based effort to "right-size" to come in the future.

Management did cite improvement in control processes instituted since the merger, while observing that it had yet to identify causes and potential solutions for areas where its comparisons with other Exelon utilities might indicate non conformity in the "numbers" of personnel. For example, management cited the significant vacancy rates (actual versus authorized positions) as one sign of progress in reaching optimal staffing, but considered it too early to take objective measurements.

Top PHISCo operations leadership recognized the importance of addressing questions of alignment and numbers, but considered changes in numbers premature, pending work needed to: (a) identify sustaining levels following bringing reliability to merger-required and management desired levels, (b) complete the process of rationalizing management layering with that of the other Exelon utilities, (c) become comfortable with the impacts of differences in jurisdictional requirements and expectations, and (d) better understand the influences of work-affecting factors like geography, density, and urban/non-urban customer mixes, for example.

Nevertheless, both PHI operations and human resources executives believe that "opportunities" exist to reduce staffing at PHI's utilities, including ACE. Comparisons of personnel numbers among the Exelon utilities forms one principal driver of that observation. Others include examination of work requirements in the PHI region, differences in territory, density, work methods, and public requirements. Leadership expects to make changes, including force reductions, the reflect local circumstances and conditions. While leadership remains as yet unprepared to quantify coming changes in personnel numbers, it is fair to say that they express a high degree of confidence that reductions will prove possible and will be made as analysis continues.

Major efforts have been underway at the operating, corporate, and support services levels to identify sources of efficiency and effectiveness gain. They should be completed with dispatch. We consider it reasonable to expect overall gains of between 5 and 10 percent in total resources applied at or in support of ACE management and operations. Those gains will come in EBSCo corporate and support services, PHISCo corporate and support services, and PHISCo (whether dedicated to ACE exclusively or applied for the benefit of all three PHI utilities) technical, operating, and customer services.

It is reasonable to expect that, for the time rates next set for ACE will be in existence, current resource levels will be materially reduced. Prompt completion of the processes of optimizing staff efficiency and effectiveness will provide a much more representative base for setting rates going forward.

F. Findings - - Compensation and Benefits

1. Responsibility for Management Compensation

Overall responsibility for managing compensation moved to Exelon following the merger, residing among the functions and activities led by Exelon's Senior Vice President and Chief HR Officer. A direct report of this executive, the Vice President Corporate Compensation exercises direct responsibility for management compensation at all Exelon entities.

The principal reports to this vice president consist of three Directors of Compensation and two principal compensation consultants. The division of the three directors is:

- Utilities
- EBSCo and Generation
- Constellation.

EBSCo, PHI, PHISCo, and ACE all address management compensation under a comprehensive, highly structured approach. The Exelon Director of Compensation-Utilities has overall responsibility for utility compensation program design and oversight, relying on PHISCo-level for execution in accord with program goals, requirements, and activities.

Exelon Human Resources personnel embedded in each of the operating companies (directed at PHI by a Vice President, Human Resources) work with the operating company CEOs to ensure effective, compliant compensation program administration. Exelon's Compensation Policy (HR-AC-64) provides the primary source of guidance.

The Exelon CEO and board of directors set and manage compensation of PHI's CEO, and that of top Exelon and EBSCo officers. Compensation of all but the top leadership of EBSCo falls under the EBSCo and Generation Compensation.

Managers and supervisors within each PHISCO and EBSCo business operation communicate directly on compensation matters with those who work for them. They also have responsibility for ensuring sound execution of the performance evaluation and other activities that drive annual changes in base compensation and awards under incentive programs. PHISCo-embedded Exelon human resources personnel provide support and oversight to ensure effective execution.

2. Overall Approach to and Components of Management Compensation

Competitiveness with industry comparable positions comprises a central element of Exelon's compensation philosophy, as it does very broadly among large U.S. business enterprises. Broad surveys provided by established experts in the compensation field drive management's establishment of compensation benchmarks for the range of positions Exelon and its entities must fill. Those surveys include utility peers for utility-specific jobs and general industry surveys for positions (*e.g.*, finance) whose job requirements and markets where employers compete for talent do not differ substantially from those of industry generally.

Exelon's compensation approach matches its list of positions to those in the survey. Managers in the organization who understand job needs most directly participate in and review those matches, supported by organization charts and job descriptions. Exelon largely completed some time ago efforts to align PHI organizations and job descriptions to Exelon's structure and definitions. This effort supported Exelon's goal of addressing compensation competitiveness consistently across all its utility operations.

The Exelon compensation organization operating under the Utilities Director of Compensation evaluates and adjusts market data before tying it to Exelon positions. The adjustments take account of factors like the vintage of market data, the closeness of the match with comparator industry positions, and, when using multiple market data sets, determining how to choose between or blend them.

Exelon's very large size has led it to benchmark base salary against a utility peer group consisting of the largest ($6 billion and above in revenue) U.S. companies holding major utility operations:

- American Electric Power
- Dominion Resources
- Duke Energy
- Edison International
- Entergy
- FirstEnergy
- NextEra
- PG&E
- PSEG
- Southern Company

Exelon considers a broader group for benchmarking its annual cash and long-term incentive competitiveness.

Adjustments to the collected market data for the full range of positions produce a current market value (the "Market Reference Point") for each position. Establishing a range around this point (the "Market Reference Range") accounts for different levels of experience that an incumbent may have, with the expectation that most employees will fall in the middle of this range at any given time. The range Exelon uses is typical of the industry.

Each management position has an assigned grade level, the primary direct consequence of which is to establish quantitative ranges on incentive targets. The next chart depicts Exelon's structure for its exempt grades, up to the highest level below officer (E06). Employees classified as non-exempt under the Fair Labor Standards Act are entitled to premium pay for overtime. Most exempt employees, generally consisting of salaried personnel, have no such entitlement. The chart shows that participation in the long-term incentive plan begins at the [redacted]

Exelon Exempt Grade Levels

(Table is Confidential)

[redacted]

Annual cash incentives under the AIP comprise one of three components that Exelon and other large enterprises almost universally apply:

- Base Salary
  - Market and performance based
  - Set through an annual salary planning process
- Short-Term Incentives (the AIP)
  - Annual cash awards based on performance against identified Key Performance Indicators
  - Calculated on the basis of performance as of the end of the calendar year
- Long-Term Incentives
  - Cash long-term incentive awards for utility employees or restricted stock and performance shares tied to long-term Exelon financial performance for non-utility employees

  - Made available to the group of senior managers, directors, and executives deemed most critical to sustaining and improving it.

3. *Salary Grades*

A structured and escalating salary structure comprises a central element of providing the compensation needed to attract and retain effective resources at competitive rates. Following the merger, the application of Exelon's position titling guidelines produced a reduction in the number of management salary grades from 16 to the 6 shown above. The top four grades represent management positions; the lower two do not, but nevertheless constitute exempt employees:

- E06 – Director
  - Manages highly specialized work (referred to as a Key Manager)
  - Reports to VP
  - Strategy/policy development
  - 4-year degree and 12 years of relevant experience
- E05 – Manager
  - Manages highly specialized work (referred to as a Key Manager)
  - Reports to Director or VP
  - Strategy/policy development, implementation
  - 4-year degree and 10 years of relevant experience
- E04 – Manager
  - Manages specialized functional work
  - Reports to Manager or Director
  - Strategy/policy development, implementation
  - 4-year degree and 8-10 years of relevant experience
- E03 – Supervisor
  - Supervises department staff
  - Works within prescribed operating procedures
  - 4-year degree and 5-8 years of relevant experience (or 9-12 years of relevant experience).

Professional, technical, and support positions exist at the bottom four of these grades:

- E04 – Principal (Job Name)
  - Operates independently with little or no supervision
  - Requires technical or professional discipline
  - Subject matter expert and may be a team leader
  - 4-year degree and 8-10 years of relevant experience
- E03 Senior (Job Name)
  - Works under minimal supervision
  - Plans and accomplishes assigned tasks

- 4-year degree and 5-8 years of relevant experience
- E02 (Job Name)
  - Works under general supervision
  - Duties and tasks frequently non-routine; refers only complex issues to higher level
  - 4-year degree and 2-5 years of relevant experience
- Associate (Job Name)
  - Works under direct supervision
  - Follows standard procedures; resolves routine issues
  - 4 year degree and 0-2 years of relevant experience.

4. Overall Compensation Framework

Management sets pay levels for its management positions on the basis of its determination of the 50th percentile of the market for such positions. The utility industry widely uses a 50 percent measure for assessing the competitiveness of its compensation. Around that midpoint, management sets a range - - defined by variations around that midpoint. [redacted] Each level also has an assigned annual incentive target. These targets, expressing the maximum amounts obtainable as an annual incentive, rise as a percentage of base salary as position level increases. Executive positions also include long-term incentive targets. The PHI compensation program also seeks to align these two incentive elements to market, in order to produce total compensation (base, annual, long-term) at the 50th percentile. [redacted]

Pre-and post-merger, Exelon and PHI have employed the universal industry approach of dividing direct compensation among base, short-term (cash-based) and long-term (issued in a form of securities or denominated by their value). The cash value of incentive-compensation targets (assuming performance qualifying for 100 percent of targeted payout) forms an increasingly larger portion of total direct compensation as position grades increase. Exelon, as is typical, limits long-term incentives to a fairly small group of executives, but again increasing as levels in the senior executive hierarchy rise.

Exelon integrated PHI management and executive employees into its compensation structure as of March 2016. Exelon continued to use as a basis for measuring compensation competitiveness the 50th percentile of its markets as measured. This measurement basis uses total direct compensation, which combines base salary, short-term cash incentive targets, and long-term incentive targets (with both targets valued at 100 percent of payout). Actual compensation may be lower or higher depending on whether incentives are paid out at above or below 100 percent. Exelon, however, uses a wider peer group of large energy, utility and general industry companies. Exelon also reports a relatively greater focus on incentives relative to base salary.

Exelon regularly tests management and executive compensation against broad and appropriate groups. EBSCo-level compensation management undertakes market pricing analysis annually to test compensation competitiveness. We examined the surveys used, noting they come from leading firms in the industry. They also include very extensive internal data gathering and benchmarking (not commonly found in our experience). The companies selected as peers for use in comparing compensation fall into two groups: energy enterprises for positions where the utility business impose unique requirements and general industry groups for positions comparable to those commonly found throughout large business enterprises.

5. *Short-Term Incentive Plan*

An-Exelon-level Annual Incentive Plan applies to all entities (including PHISCo and ACE) except for Constellation, which operates under a distinct one. Employee award calculation follows this path:

- Multiply employee base salary by the percentages set as targets for each salary grade to set base award potential amounts by employee (the chart below shows these percentages by grade for 2018)

Annual Incentive Targets – 2018

(Target Values in Table are Confidential)

Grade	Target	Grade	Target
E01	[redacted]	E04	[redacted]
E02	[redacted]	E05	[redacted]
E03	[redacted]	E06	[redacted]

- Using the targets set by the Company Performance Multiplier (a set of targets that together total 100 percent) calculate performance under each ([redacted]) and sum them
- Multiply each employee's base award potential by the resulting sum of the calculated percentages
- Multiply that result by an employee's Individual Performance Multiplier ([redacted]) derived in consideration of the employee's year-end performance rating.

The following chart shows a hypothetical example of the calculation of an individual employee's annual incentive award.

Hypothetical Annual Incentive Award Calculation

(Table is Confidential)

[redacted]

A set of key performance indicators for the various Exelon businesses determines the Company Performance Multiplier (the amount available to fund the annual incentives). PHISCo, ACE, and the other two PHI utilities comprise one of these units. Each of the key performance indicators has an assigned percentage weight and together they total 100 percent of the determinant for annual incentive plan funding. The next chart shows the 2018 PHI measures (all measured at the PHI level).

2018 PHI Annual Incentive Program Weightings

(Weight Values in Table are Confidential)

KPI	Weight	KPI	Weight
Total O&M Expense	[redacted]	Integration Milestones	[redacted]
Adopting Best Safety Practices	[redacted]	Call Center Satisfaction	[redacted]
Outage Frequency (2.5 SAIFI)	[redacted]	Customer Satisfaction Index	[redacted]
Outage Duration (2.5 CAIDI)	[redacted]	Gas Odor Response	[redacted]
Service Level	[redacted]	TOTAL	[redacted]

The annual incentive program treats EBSCo, like it does PHI, as a separate entity. [redacted], with the exception of those employees nominally assigned to EBSCo but "embedded" in a business unit (take PHI as an example). The annual incentives of these embedded EBSCo employees have the same measures and weightings as those applicable to other PHI employees.

Each key performance indicator contributing to the determination of annual incentive funding includes three defined performance levels. First is the nominal ("Target") level of performance set for the indicator. Each indicator also has floor ("Threshold") level defining the minimum performance required to produce any funding associated with that indicator. The third level ("Distinguished") sets the maximum funding amount that the indicator can contribute. Thus, each indicator's contribution becomes a function of which of the three levels performance reaches.

If performance as measured by the indicator falls below the threshold it produces zero contribution. For example, an indicator with a weighting of 10 percent will contribute nothing if performance fails to reach the Threshold level. Performance between the Threshold and the Distinguished level produces a multiplier based on the measurement. For example, an indicator with a weighting of 10 percent and performance measured at 75 percent of its Target level will produce a funding contribution of 7.5%. A measurement of 125 percent of Target for that indicator will produce a contribution of 12.5 percent. The Distinguished level serves to cap each indicator's contribution at [redacted] of its target level.

The next table provides a simplified, hypothetical example of how the indicators and levels work to produce funding for the annual incentive program. It assumes that four key performance indicators apply. The indicators could use measures like category or event dollars, frequency, duration, or index measurement, among others. As the chart shows, differentials in performance levels under each indicator affect the total funding amount available.

Incentive Weightings and Performance Example

KPI	Threshold	Target	Distinguished	Performance	Weight	Contribution	Notes
No. 1	60	80	128	100	40.0%	50.0%	Performance/Target
No. 2	15	20	25	16	30.0%	24.0%	Performance/Target
No. 3	2	4	8	9	20.0%	40.0%	Capped at 200%
No. 4	230	260	290	225	10.0%	0.0%	Beneath Threshold
Total					**100.0%**	**114.0%**	Total funding exceeds target

Two sources of override from the Exelon Board of Directors apply to the calculation of the total:

- If a "Significant Event" (one producing significant cost or risk, such as a major outage) occurs, amounts in the affected KPIs can be reduced or eliminated.
- The board may in its discretion reduce operating company awards that exceed 120 percent of target.

Subsection 7 below describes how management determines the last factor, the Individual Performance Multiplier. A Reward and Recognition policy provides another cash award opportunity. This program provides for cash award for significant contributions not otherwise recognized in an employee's compensation. Awards up to [redacted] require business unit vice presidential and Human Resources approval. Award in excess of that amount require further approval from senior operations and Compensation executives.

6. Long-Term Incentive Plan

The top two grades of management employees and all officers participate in Exelon's long-term incentive program. The program makes use of cash-based and equity-based rewards "closely related to the interests of Exelon's shareholders, generally as measured by the performance of Exelon's total shareholder return and stock price appreciation." The awards for the two eligible management grades in organizations not part of Exelon Utilities entities include restricted stock awards. Eligible management-level employees under Exelon Utilities (including PHI entities) participate in a similar cash-based program. Executives (with the exception of senior officers in organizations under Exelon Utilities) have eligibility for a mix of restricted stock and performance shares. Officers below the senior vice president level in organizations at and under Exelon Utilities participate in similar cash-based programs. The Compensation and Leadership Development Committee of Exelon Board of Directors establishes the performance conditions that trigger the performance-share portion of executive-incentive awards. The remainder comes in the form of restricted stock units (or a cash equivalent).

Established vesting periods (generally three years) require reward recipients to remain with the company. Award targets consider each participant's position, performance, and expected award value. Restricted stock units earn dividend-equivalents during the vesting period.

7. *Linking Compensation to Performance*

a. Manager and Supervisor Compensation Responsibilities

Exelon provides for compensation planning under a structured annual process that uses regular cycles, relying on ePeople, a system that enables on-line performance of and controls over the activities that managers must accomplish to support timely compensation decisions. The annual reviews of Exelon's Corporate Compensation group produce market pricing for positions, providing guidance to incentive and base salary program activities that take place in the first quarter each year.

Annual compensation-setting activities employ the results under the performance management system for each employee. Managers with compensation planning responsibility attend webcast training each December. They enter their compensation recommendations and review their direct reports in the first half of January. The PHI CEO must approve all recommendations for PHISCo/ACE employees.

An electronic platform supporting compensation decisions facilitates annual base-salary increase and annual incentive program cash award processes. Each manager uses a screen showing a budget field indicating how much is available to award as base salary increases for the group of personnel for which the manager has compensation-setting responsibility. This budget amount equals the cumulative total of annual base salaries for all the involved employees times the corporately-determined amount available for base compensation increases. That percentage has remained at 2.5 percent per year at Exelon since before the merger.

A manager awarding the same 2.5 percent to all the employees involved would consume exactly 100 percent of the available budget for base salary increases. If the manager, for example, enters a 3.5 percent increase for an employee with a base salary of $50,000 ($500 above an award at 2.5 percent) others will have to receive percentages far enough below 2.5 percent to remain to make up that $500.

A similar budget field controls the entries into each involved employee's annual incentive amount as well, ensuring that the manager uses no more than the amounts made available by the percentage-of-base-salary multipliers applicable to base salary increases and annual incentive payments.

Compensation management at Exelon also guides managers who make compensation entries in how to consider performance ratings (based on what Exelon terms individual goal attainment and "competencies"). Managers receive guidance on the range of base increases to award based factors like:

- Where among the three performance categories (Limited, Meaningful, or Extraordinary Impact) the employee falls, with indicated salary increases for those at the lowest of the three categories significantly below those falling in the highest)
- Whether an employee rated at the lowest category ("Limited Impact") is new or not
- Where the employee's salary falls in relation to the Market Reference Point for the employee's position (the lower in the range, the more the increase called for)

- Use of lump-sum payments for employees at the upper edge of the salary range (Market Reference Range) for their position - - in order not to produce base salaries outside the established range.

b. Determining Individual Performance Multipliers

A company-wide (PHISCo/ACE) Company Performance Multiplier described above determines the overall percentage of base salary that the annual incentive will produce. An Individual Performance Multiplier for each employee modifies that percentage for each employee. Compensation managers also receive guidance in how to determine these multipliers for each employee. That guidance includes how one can vary individual multipliers based on factors like trends in an employee's performance, newness in the position for employees in the lowest performance category, and comparison to peers in the two higher performance categories.

The electronic platform that managers use in making entries for these Individual Performance Multipliers includes control features:

- Alerts that advise a manager ("compensation planner") that an entry falls outside the guideline percentages
- Forcing the cumulative entries for base salary adjustments and annual incentive program Individual Performance Multipliers to produce results that, for all employees the planner addresses fall into budgets for the two sources of compensation, accomplished by budget total, budget spent, and budget remaining as each individual entry is changed.

c. Informing Employees about Compensation Changes and Targets

Each employee receives an annual statement identifying using 2018 as an example:

- A rating for 2018 (Limited, Meaningful, or Extraordinary Impact)
- Job title
- That job title's applicable Market Reference Range for 2019 ([redacted])
- The individual's current annual base salary
- The percentage and dollar base salary adjustment for 2019, effective March 1
- New Base Salary (current plus adjustment)
- The employees 2019 Annual Incentive Target (percent and dollars)
- 2019 Target total direct compensation (2019 new base salary plus annual incentive target and any long-range incentive available)

8. Management Compensation Competitiveness

a. Non-Executive Management

PHI's measurements of total compensation against the 50th percentile seek to align compensation on average among employee participants over time. PHI uses the industry standard "Compa Ratio" to take these measurements. An individual Compa Ratio of 100 percent means that the individual's compensation aligns exactly to the mid-point of the individual's pay range, as determined generally through use of databases that provide comparable information across a broad range of business enterprises. Recent-year management (non-executive) overall Compa Ratios (measured in March of each year) have been:

[redacted] [redacted] [redacted] [redacted] [redacted]

PHI management did not do the benchmarking required to determine compa ratios for its executives from 2014 -2016, due to restrictions on its ability to change executive compensation while the merger with Exelon remained pending. In post-merger years, however, the PHI executive compa ratios have been higher for executives than for management: [redacted]

b. Lower-Level Officers

Exelon employs a large number of executive and senior vice presidents at Exelon, EBSCo and the operating companies, including PHI. [redacted] Exelon takes these measures using the Energy Services peer group information from the consultant used generally for addressing management compensation. [redacted]

c. Senior Executives

Exelon annually secures externally-prepared market assessments of compensation for its top 10 officers, who include the top officers at each utility operation (the President & CEO at PHI). We reviewed the two most recent (dated December 2016 and November 2017). The Exelon board of directors used these assessments in determining compensation for the following calendar years for Exelon's nine top executives, other than the parent CEO:

- Sr. Executive Vice President and Chief Strategy Officer
- Sr. Executive Vice President, Chief Commercial Officer, Exelon Generation CEO
- Sr. Executive Vice President & CFO
- Sr. Executive Vice President & CEO, Exelon Utilities
- Executive Vice President and Chief Enterprise Risk Officer
- President & CEO, Commonwealth Edison
- President & CEO, Pepco Holdings
- President & CEO, PECO
- CEO, BGE
- Sr. Vice President & Corporate Controller.

A firm with an industry leadership position in compensation prepared them. The assessment used reasonably standard bases for valuing compensation elements for measurement purposes:

- Total Cash Compensation
  - Actual base salary
  - Targeted annual incentive opportunity (*i.e.*, subject to earning through performance)
- Value of long-term incentives at the date of their granting
- Target total cash compensation (cash plus long-term incentives).

The assessments for both years found Exelon's mix of compensation among the three elements (base, annual incentives, and long-term incentives) closely aligned to the market. [redacted]

The 2016 assessment used a leading survey of 365 general industry companies for top positions and of 91 energy services companies for utility leadership positions. The 2017 survey changed to the use of proxy statement information for the top positions.

[redacted]

Exelon Top Officer Compensation versus Median

(Table is Confidential)

Group	Base Salary	Total Direct	Experience
[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]

9. Benefits

Benefits and post-retirement costs have spurred significant growth in employee-related costs in recent years. We assessed effort and methods to control benefits cost while continuing to provide competitive benefits packages. The benefits area has also grown in complexity, not only because of changes to how health care benefits are delivered, but also because of the complexity that legislation and regulation have brought to benefits planning and administration.

In assessing benefits comparability, PHI's pre-merger primarily relied on the Towers Watson BenVal Study to provide data for benchmarking its benefits program for non-represented employees, citing the 2015 Energy Services BENVAL Report as the most recent version. Post-merger, Exelon used an Aon Hewitt benefits benchmarking study to design its consolidated 2018 benefits program for non-represented employees. The work of both firms finds very wide-spread use in the industry.

Exelon received in December 2016 an outside analysis of its benefits program. A leading firm in the industry compared Exelon's and PHI's benefits programs to a peer group selected by management. The firm produced a comprehensive discussion of Exelon's benefit programs in the aggregate and by area. Management also had access to the outside firm's tools that permit Exelon to examine benefit specifications and the prevalence of benefit types of firms across the country. The peer group that Exelon management chose included 11 of the country's largest utility holding companies and 7 major manufacturing firms. The value, rather than the costs, of benefits provided formed the basis for comparing Exelon and PHI with the 18 peer group members. The analysis grouped benefits into five overall categories:

- Retirement Income
- Active Employee Health Care
- Retiree Health and Welfare
- Active Employee Welfare
- Time Off with Pay.

Overall, PHI benefits ranked higher than all but one of the 18 peer group companies, with Exelon ranking higher than all but three on a total value basis. The distribution of Exelon's benefits among the five categories closely paralleled overall peer group results, with PHI diverging in the two areas that comprise the highest portion of benefits value. A higher percentage of PHI benefits went to retirement income and a lower percentage to time off with pay. Measured more broadly against utilities nationwide, Exelon's benefits total value fell somewhat below the nationwide utility average for 2015 and PHI's value was essentially equal to the national average. Of the 30 industry groups the outside firm charted separately, utilities fell only below pharmaceuticals in benefits value. The 11 utility holding companies in the 18-company peer group chosen by Exelon include the country's largest. The higher benefits value for utilities nationally suggests that smaller utilities generally provide greater benefits values than do larger ones, with Exelon and PHI as exceptions.

The comparisons provided by the outside firm break the larger categories down into a number of components, permitting management to look at benefits comparability at a very granular level.
Comments provided by the outside firm indicated that both Exelon and PHI employees paid a smaller than average portion of the costs of their benefits.

A 2015 comparison by another leading outside firm comparing PHI to a group of 14 peers showed total benefits values below the median. This comparison showed the comparative value of PHI benefits components in more than 30 detailed categories. A 2014 study by Exelon compared its benefit program with those of 18 other companies, one of which was PHI. That comparison showed total Exelon benefits value the fourth highest (excluding employee contributions) and PHI's the sixth. Counting employee contributions, Exelon ranked third highest and PHI seventh.

Management reported no material benefit plan design changes since the merger for non-represented employees. The same paid time off policies and the same health and welfare, pension and retirement savings plans existing before the merger continued to apply to current and retired employees. Management made no design changes to life insurance and prescription drug programs, but consolidated life insurance providers and changed the prescription drug vendor. Several changes in supplemental life insurance now give employees more options. Effective as of January 1, 2018, management reduced life insurance amounts to equal base salary and introduced a new disability plan, and revised the vacation policy and holiday schedule for non-represented employees. Exelon has closed access for newly hired non-represented employees to company-funded retiree life insurance and retiree medical benefits, and made available to them Exelon's Cash Balance Pension and retirement savings plans in lieu of PHI traditional pension and savings plans.

10. Post-Retirement Costs

The next table summarizes changes in pension liabilities, assets, and costs (in millions of dollars) through 2015, the last full year preceding the merger.

Pre-Merger PHI Pension and OPEB Obligations and Funding

	Pension Benefits			*OPEB*		
	2015	*2014*	*2013*	*2015*	*2014*	*2013*
Change in Benefit Obligation						
Jan. 1 Oblilgation	2,638	2,238	2,494	632	574	775
Service Cost	57	44	53	7	7	8
Interest Cost	109	109	100	24	26	29
Amendments			3			(124)
Actuarial Loss (Gain)	(151)	401	(277)	(61)	59	(71)
Benefits Paid	(163)	(154)	(135)	(39)	(34)	(43)
Dec. 31 Obligation	2,490	2,638	2,238	563	632	574
Change in Plan Assets						
Jan. 1 Asset Fair Value	2,236	2,116	2,039	367	368	321
Asset Returns	(61)	268	86	1	21	56
Contributions	6	6	126	5	6	34
Benefits Paid	(163)	(154)	(135)	(25)	(28)	(43)
Dec. 31 Asset Fair Value	2,018	2,236	2,116	348	367	358
EOY Funded Status	(472)	(402)	(122)	(215)	(265)	(206)

millions of dollars

Exelon's year-end reporting for 2016 noted its assumption of sponsorship for PHI's pension and OPEB plans, listing funding gaps (obligations less assets) at $472 million for pensions and $215 million for OPEB. Exelon then provided the following summary of funding status of the Exelon and PHI plans. Project benefit obligation (PBO) and accumulated benefit obligation (ABO) measurements differ in that PBO calculations incorporate assumptions about future compensation levels. The chart shows that: (a) no material PBO difference existed between Exelon and PHI funding levels at the end of 2015, (b) the larger difference on an ABO basis makes the future compensation levels assumed more material in identifying the funding impacts of combination using 2015 data, and (c) 2016 funding differed only marginally from separate PHI funding from the preceding year.

Comparative Pension and OPEB Funding

Entity	2017		2016		2015	
	PBO	*ABO*	*PBO*	*ABO*	*PBO*	*ABO*
PHI	not applicable post-merger				81%	89%
Exelon	83%	88%	80%	84%	81%	85%

The next table shows the amounts underlying these calculations, reflecting post-merger changes in Exelon-wide (including PHI/ACE) pension obligations and funding. The moderate changes in expected obligations have been more than offset by increases in plan asset values.

Post-Merger Changes in Pension Funding

Projected Benefit Obligation (PBO)			
Description	**2017**	**2016**	**Change**
Projected Benefit Obligation	$22,337	$21,060	$1,277
Fair Value of Net Plan Assets	$18,573	$16,791	$1,782
Difference	***$3,764***	***$4,269***	***-$505***
Accumulated Benefit Obligation (ABO)			
Accumulated Benefit Obligaiton	$21,153	$19,930	$1,223
Fair Value of Net Plan Assets	$18,573	$16,791	$1,782
Difference	***$2,580***	***$3,139***	***-$559***

G. Conclusions - - Compensation and Benefits

6. Exelon has brought appropriate organizational structure and overall approaches to managing compensation.

The large size and scope of Exelon's operations supports the effective and efficiently deployed compensation expertise, centralized at the Exelon level. Establishment of separate responsibility for compensation at operations under Exelon Utilities, which includes PHI and ACE, provides appropriately utility-focused compensation management for executives and managers on whose efforts ACE relies.

7. Exelon has brought to PHI and the organizations supporting its operations a well-structured process for defining positions, establishing competitive compensation benchmarks, and applying them to set compensation.

Substantial early efforts by Exelon to coordinate and rationalize position descriptions and to streamline position grades have contributed materially to the ability to provide a coordinated, well-balanced, consistent, and utility-job-focused compensation management program and systems, tools, and metrics. As typifies Exelon's approach generally, the existence of reasonably comprehensive, procedurally detailed, and well-documented compensation guidance supports effective compensation management.

The guidance gives sufficient emphasis to the need for regular, clear, and consistent communications with employees to ensure understanding of how the compensation system works, what compensation-affecting roles managers and supervisors have with respect to those reporting to them, and what individuals can expect in its application to them.

8. Overall compensation targets and the balance among compensation elements are appropriate and typical of the industry and they are supported by suitable market data and outside analysis.

As do most, Exelon targets compensation at the median of the market for all positions. It provides market measures for all positions, using utility or general market benchmarks as appropriate, depending on the uniqueness of positions to the utility industry. The balance among base, short-term incentives, and long-term incentives is appropriate and in accord with utility experience. Exelon makes proper use of outside consultants and its size gives it the ability to add significant value to market analysis through its internal efforts. The Exelon board and management make timely and effective use of industry-accepted approaches to and providers of data and analysis concerning benchmarking.

Exelon distinguishes between its utility and non-utility compensation components, benchmarks, and targets. Compensation levels generally conform reasonably closely to market benchmarks and to an appropriate goal of compensating managers and executives at the 50^{th} percentile, but some fine-tuning appears to remain. The balance among base salary, annual incentive targets, and long-term incentive targets is competitive, as demonstrated by the benchmarks used by Exelon. The increasing percentages of compensation placed at risk through incentives as management level rises is also representative of the industry.

9. Sound and effective ties exist between performance management and measurement and compensation.

The processes applied in assessing individual performance and in setting incentive targets include adequate focus and emphasis on objective measures substantially tied to ensuring effective and efficient performance on behalf of ACE.

10. Exelon benchmarking, now approaching two-years old, shows conflicting information about benefits values, with some indication that they are generous when measured against those of the peer groups used. *(See Recommendation #2)*

Management compensation as measured by compa ratios (comparing it to market) have been increasing. They marginally exceed par (100 percent of market), but remain reasonable. However, new, consistent data regarding benefits values and costs would substantially inform decisions about combined compensation and benefits competitiveness.

11. Pension funding levels have improved marginally since the Exelon merger, but remain at roughly the same overall levels.

H. Recommendations - - Compensation and Benefits

2. Conduct a comprehensive review of benefit levels and apply the results to assess competitiveness of combined compensation and benefits values. *(See Conclusion #10)*

A study of similar scope to the one last completed by Exelon would provide useful information in determining competitiveness of benefits alone and in combination with compensation. The study should also consider the costs of providing such "value" to employees. To the extent that the large size of Exelon may promote a better than normal value/cost ratio, such leverage provides Exelon greater flexibility in using benefits effectively in designing an attractive, yet competitive, package to entice and retain employees. Management's comments on a draft of this report indicated receipt of an updated benchmarking report.

Chapter XII: Strategic Planning Table of Contents

Chapter XII: Strategic Planning

A. Background

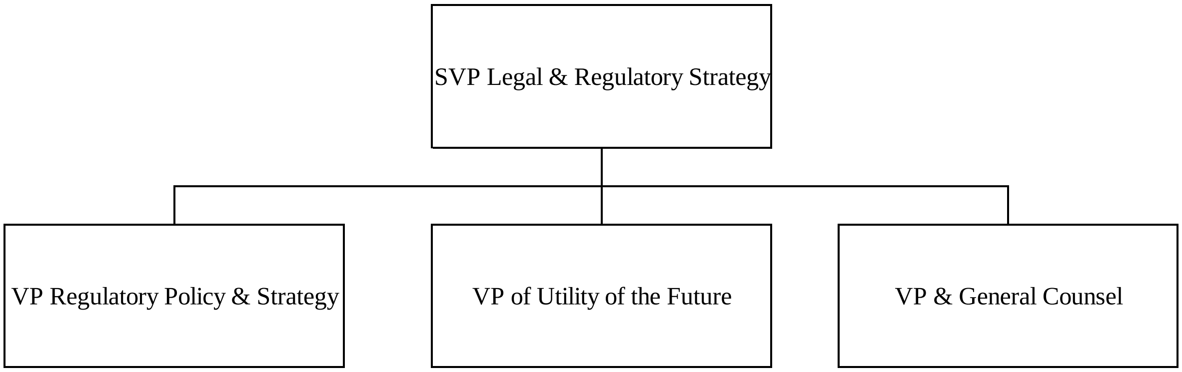
Utilities and the holding companies that operate them should regularly examine the content and implementation of their strategies, in order to properly identify material external and internal driving forces affecting their ability to meet public service requirements fully, effectively, and efficiently. The strategic planning process addressing the operations of ACE occurs in a three-layered process, involving its own needs and circumstances, those of the other PHI utilities, and those of Exelon's other utility and non-utility businesses. Particularly important longer-range planning considerations include setting objectives and overall strategies for meeting continuing needs, enhancing performance, developing the capability, approaches, and programs to address changing expectations, and addressing the need for planning and developing major infrastructure projects. Strategic planning and related financial forecasts should provide for financial controls and integrity, ethical standards of conduct, customer satisfaction, employee development, organizational structure, risk management, corporate accountability, safety, compliance, external relations, and ensuring that non-utility operations (exceptionally large in the case of Exelon) do not risk harm to utility operations.

Our examination of strategic planning through the mid-2018 time period considered Exelon/PHI and ACE personnel and their preparation for their roles, as well as how the roles get planned, structured, executed, and measured. We examined success in how well key personnel have made the transition to the post Exelon/PHI merger operating environment. We considered how well Exelon and PHI have incorporated strategic separation in its planning to focus properly on the interests of ACE and its customers.

We looked at how Exelon, PHI and ACE collectively and individually go about formulating strategic plans. We examined how they obtain, assess and incorporate external market, regulatory, economic, and technology factors, how these strategic plans are supported with management and financial resources, and how plans employ contingency planning and risk assessment and management.

Large changes have occurred in the strategic planning processes since the merger with Exelon in March 2016. PHI made strategic planning and related financial forecasting part of one process for the holding company and all of its utilities. The Exelon approach separates financial forecasts (known as Long-Range Plans or LRPs) from "conceptual strategic planning." We described and assessed the LRP processes and financial forecasts in Chapter V, *Capital Allocation*. This Strategic Planning chapter focuses on the high-level conceptual and initiatives portion of Strategic Planning for ACE, PHI and Exelon as it relates to ACE utility operations.

The next chart depicts the 2018 organization of the PHISCO Senior Vice President for Legal & Regulatory Planning, who has responsibility for ACE and PHI regulatory strategic planning:



B. Findings

1. Exelon Mission, Vision and High-Level Strategy

Exelon's 2018 mission statement and vision statements (for all of Exelon Corp.'s businesses, including all utility and diversified businesses) proclaims that:

> *Our Mission*
> *Exelon's mission is to be the leading diversified energy company - by providing reliable, clean, affordable and innovative energy products.*
>
> *Our Vision*
> *At Exelon, we believe that reliable, clean, and affordable energy is essential to a brighter, more sustainable future. That's why we're committed to providing innovation, best-in-class performance and thought leadership to help drive progress for our customers and communities.*

In addition, Exelon has adopted a Purpose Statement, declaring "Powering a cleaner and brighter future for our customers and communities." These statements apply to PHI and ACE, although more specific mission and vision statements exist at Exelon Utilities, under which Exelon provides common governance, support, and measurement of all its utility operations.

Exelon's statements of high-level strategy establish a number of propositions:

- *As the energy industry undergoes rapid changes, Exelon is executing a strategy to grow and diversify the company. We're making targeted investments in core markets and promising technologies with the potential to reshape the energy landscape.*
- *Exelon's advantage is our competitive integrated business model. It provides a platform to pursue a broad range of opportunities as changing consumer behavior, rapidly evolving technologies, challenges to grid integrity and continued industry consolidation transform the industry.*
- *Each of our component businesses – regulated utilities, merchant generation and competitive retail services – gives us a unique view into the entire energy spectrum. They also provide insight into the technologies and trends that will drive value for our customers and shareholders going forward.*

- *The driving principle behind Exelon's strategy is to preserve the value of its core assets, while also capitalizing on emerging trends and technologies to diversify the business for growth.*
- *Exelon believes the energy industry is entering a long transformation. We believe we have the right business model and vision to grow our core markets, capitalize on emerging trends and thrive in this period of change.*
- *The areas of focus that propel our strategy will allow us to reap increasing value from today's regulated and competitive opportunities while enabling greater value creation as we master new competencies and take advantage of new growth opportunities.*

In response to our request for specific short-term goals and objectives, including financial targets, for Exelon, PHI, and ACE, management referenced the parent's year-end investor earnings call decks, which included long-term financial targets that have been consistently included in their investor presentations for the past few years:

The deck for the fourth quarter of 2017 described the "Exelon Value Proposition" for the future as:

- *Regulated utility growth with utility EPS rising 6 to 8% annually from 2017 to 2021 and rate base growth of 7.4%, representing an expanding majority of earnings;*
- *ExGen's strong free cash generation will support utility growth while also reducing debt by ~$3B over the next 4 years;*
- *Capital allocation priorities targeting:*
    - *Organic utility growth;*
    - *Return of capital to shareholders with 5% annual dividend growth through 2020;*
    - *Debt reduction (at Exelon Corp. and ExGen); and*
    - *Modest contracted (ExGen) generation investment.*

This 2018 Exelon Value Proposition compares substantially to its recent year predecessors.

Utility rate base growth and utility earnings targets have central importance in Exelon's overall strategy. A member of senior PHISCO executive management declined to call the earnings targets "long-term goals and objectives." He considered them as a "value proposition" to investors and one of many goals, both operational and financial, that could produce such financial "outcomes." Nevertheless, we view growth in earnings per share and rate base investment growth as central drivers of Exelon financial results, included in their planning and communicated to the investor communities in publicly-available documents.

2. *Exelon Utilities Vision and Strategy as of 2018*

Exelon Utilities (EU) serves as the oversight organization for the four utility groups owned by Exelon Corp. For the utilities under Exelon, the Exelon Utilities management is the primary driver of visions, goals and objectives, strategic initiatives and overall strategic planning.

Exelon Utilities employs a vision statement more specific to the utility operating environment:

> *Our commitment is to effectively deliver safe, affordable, reliable and clean energy and innovative services that benefit our customers and communities. We will provide smart energy solutions to enable our customers to better understand and manage their individual energy needs. Exelon Utilities will provide a platform for customers to connect to energy networks, devices and information. Employee engagement is also crucial in meeting this vision.*

“Strategy retreats” attended by senior executives of all the utilities include discussion of high-level strategy for EU. Executive management describes an evolution in the Exelon Utilities’ “Desired Business Model,” moving from:

- The former - - Enhanced Status Quo
- The more recent - - Network Service Provider/Integrator
- The current direction - - Customer “Full Service” CES (Customer and Energy Services) provider.

Reaching the full-service CES state involves adding customized, value-added products such as generation and related services, including distributed energy resources (“DER”), financing options and creative pricing. It entails pursuit by the Exelon utilities of rate-recovery mechanisms considered supportive of distributed generation and other offerings to utility customers. The CES platform also includes the provision of competitive services.

Exelon Utilities’ strategy to “Transform into a CES provider” includes a number of defined attributes:

[redacted]

We found Exelon Utilities’ vision and strategy similar under the 2017 and 2018 planning cycles. Refinements for 2018 do, however, emphasize the Exelon CES, full-service provider concept. EU has also developed “Strategic Objectives” that expand the preceding list of attributes through specific objectives statements. The PHI-level objectives show tailoring and specificity to the circumstances of its operation and jurisdictions. They drive the strategic direction for the three PHI utilities. For instance, New Jersey energy policy has shifted under a new administration, adding specific ACE-related objectives to those of PHI.

The strategic objectives that detail the five attributes for Exelon Utilities for 2018-2022 comprise:

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

EU also has additional objectives regarding culture, operational performance and financial performance:

[redacted]

EU has identified numerous specific activities supporting each of the above objectives.

PHISCo senior executive management considers the vision and business strategies of the six Exelon utilities generally similar. However, each has different priorities corresponding to the drivers within each of the jurisdictions. For example, New Jersey's energy master plan has generated initiatives and projects. Micro grid, solar system, and electric vehicle initiatives form a focus for PHI in Maryland, with plans to extend them to the District of Columbia, then to Delaware, and then to New Jersey.

The strategic planning process also addresses emerging markets and businesses. An Exelon corporate strategy group operating across all companies examines trends, new technologies, potential investments and potential business partners broadly across Exelon as a whole. The Exelon parent has an over-arching vision of becoming a platform provider and provider of data analytics for energy customers, as shown above. In addition, electric storage and batteries, a key emerging technology, comprises an Exelon emphasis. This is exhibited, for example, by PHI's participation and support of a 5 MW solar and on-site storage facility under construction at Chesapeake College in Maryland. At the time PHI was also considering a proposed micro grid at Rockville in Maryland, and a distributed energy resource, including storage, at a public facility.

With Maryland the current focus of participation in markets that lead technologies, Exelon is targeting demand response in New Jersey.

3. *Goals, Objectives, and Strategic Initiatives - - 2018*

Formation of mission statement, goals, and objectives at ACE/PHI and EU relies significantly on offsite senior executive team meetings. These meetings address annual joint goals and objectives for eventual publication within the enterprise. The goals focus on five overall areas: reliable service, safety, regulatory performance, financial discipline, and community involvement. Management develops multiple goals for each area. A comprehensive set of key performance indicators (KPIs) undergo monthly measurement, as do financial measures, and form a focus of monthly, quarterly, and annual meetings and reporting.

PHI's current "Strategic Objectives" focus on four key priorities:

- Safety
- Reliability and Operational Excellence
- Regulatory Outcomes and Financial Accountability
- Engagement, Employee Development and Training.

The objectives seek to allow PHI to accomplish the following operational goals:

- Achieve 1st decile safety performance
- Achieve 1st quartile reliability performance
- Achieve 1st quartile customer satisfaction performance
- Foster strong employee engagement (measured by employee surveys every two years)
- Continue to deliver on merger commitments (clearly measured and quantified in the Chapter VIII, Merger Conditions)
- Executed regulatory strategy (improve PHI earnings and ROEs by frequent rate filings and mechanisms. Also, DC has a multi-year forecasted rate case under consideration)
- Align organizational headcount (EU efficiency study recommendations)
- Integrate key IT systems.

"PHI Business Plan Initiatives" set forth measures designed to support achievement of established objectives. [redacted]

First Smart Energy Services Implementation

(Figure is Confidential)

[redacted]

[redacted]

4. PHI/ACE Business Performance Measurement

Senior executive management of EU focuses strongly on performance measurement. We reviewed PHI Monthly Performance Summary "scorecards" for 2016 through 2018, finding them comprehensive and consistent. The EU meets formally with the individual utilities at least quarterly to address performance indicators and measurements. Exelon has brought a significantly more rigorous and comprehensive approach to the use of utility performance metrics, including routine comparison among results of the six Exelon utility operations.

Scorecards include current (monthly or quarterly) and year-end performance metrics for actual performance versus goal metrics, in several different categories. The categories include "Organizational Effectiveness" (safety, 112 metrics), "Operational Excellence" (reliability and operations, 53 metrics), "Customer and Stakeholders Satisfaction" (customer, 6 metrics), and "Financial Discipline" (5 metrics). Each metric has an "executive lead" accountable for performance under it.

5. Enterprise Risk Management

Exelon employs a comprehensive approach to enterprise risk management, conducting it under a well-documented program. Program-governing documentation addresses five broad risk categories - - strategic, financial, operational, regulatory and compliance, and reputation. At least annually, each of the risk areas undergoes "fresh eyes" review to ensure that risk identification remains current. This review also provides for current assessments of risk rankings, the extent and quality of current mitigation efforts, and the addition of additional mitigation measures found justifiable. The Exelon utilities have many common risks, but examination of the particular risks of each forms a component of annual review and planning. Exelon's larger "strategic risks" generally involve its merchant, not utility, operations in the electricity business. Similarly, the largest financial risks (*e.g.*, counterparty credit risk) also concentrate in Exelon's generation and market business operations. An Exelon-level risk management group takes the lead on analyzing and determining mitigation actions for all of the risk categories. Policy documents support the ERM, including Risk Appetite, Strategic Risk, Credit Risk, Liquidity, Market Risk and Reputational Risk.

We reviewed key elements of the program, focusing on risk "heat maps," processes for examining risk measurement and mitigation, and the descriptors addressing specific risks significant to utility operations generally and in New Jersey. The documentation is comprehensive and it appears sound in addressing risk tolerance (a key starting point for designing mitigation measures), measuring risks before and after current mitigation efforts, and in addressing potential further mitigation efforts.

A PHI Risk Management Committee (RMC) seeks to provide risk oversight to help PHI leadership make decisions that appropriately balance risks and rewards, using information and measures described as objectively as possible. This committee makes certain processes exist to identify and assess risks and manage risk exposures consistent with Exelon's strategies and risk appetite. The PHI Risk Management's principal responsibilities comprise:

- Ensuring implementation of the Exelon Corporate Enterprise Risk Management program and of PHI-level risk policies
- Taking a formal risk identification and management approach to reviewing capital projects and attendant risks (a strength of the risk management approach Exelon has brought to PHI is its extension of formal risk management to capital project review)
- Reviewing non-standard transactions (guided by Delegation of Authority documentation setting dollar approval limits for executives and boards)
- Reviewing top risks by heat maps, mitigation plans, and risk metric dashboards
- Reviewing the strategic direction of the PHI utility businesses and associated risks
- Discussing and dealing with matters and issues identified by the overarching Exelon corporate level Risk Management Committee and the Exelon board's Finance and Risk Committee.

Some examples from the "PHI Heat Map" for 2018 show how attention to "local" issues becomes incorporated into risk management processes. The 2018 documentation showed improvement in risk exposure from earlier (2015 and 2016) versions. PHI's "Financial Performance and Health" risk fell in severity and probability (multiplication of these two factors forming the primary gauge of risk). PHI's first round of post-merger rate case outcomes produced the mitigation observed by management, which indicated that the PHI utilities have employed "catch-up" rate cases following two years of no rate case filings prior to the merger closing. We also noted a decline in "Atlantic City economy" risk severity, recognizing a slowing in the rate of decline in casino revenues. While moderating in recent years, program documentation still rates further load and revenue reductions from casino closings and municipal financial condition as material risks.

6. Linkage to PHI Long-Range Plans

These LRPs provide management with financial forecasts that reflect ongoing business operations while incorporating the effects of industry and economic trends, strategic initiatives, and other programs set forth in the strategic plans. The strategic planning processes described above precede and help drive construction of LRPs. The strategic goals, objectives, strategic initiatives and specific programs identified in the strategic planning process form foundations for building five-year capital expenditure plans and operating plans executed to conform with the Long-Range Plans' financial projections. Tight linkage between strategic plans and the LRP process is necessary. We described the LRP process in detail in this report's "Capital Allocation" chapter.

The "Capital and O&M Target Setting" step comprises an early step in Exelon's approach to preparing the five-year LRP and annual financial plan. In April and May of each year, embedded PHI Finance personnel are assigned as "partners" to utility operating company leadership and work with management (PHISCo Technical Services in the case of ACE and the other PHI utilities) to identify and assess operational needs for the coming five years to be addressed by the next plan. These leaders develop Capital and O&M targets for the upcoming five-year plans, aligned with the parent's goals, objectives and metrics established in the strategic plans.

The PHI Director, Financial Operations also works with PHISCo Investment Strategy in identifying overall CAPEX spending levels for the PHI utilities. A joint effort involving PHI Finance and PHISCo Investment Strategy determines the "guardrails" for PHI utility capital spending (*i.e.*, acceptable ranges into which it should fall). Investment Strategy then provides capital and O&M spending guidance to managers with planning responsibility for the variety of functions and activities conducted to provide and support PHI utility operations.

7. Management Focus and Diversification

The PHISCO management team has full focus on the businesses, operations and strategies of the PHI utilities, including ACE, Pepco and DPL. In particular, the PHISCO executives involved in Strategic Planning and the LRP financial forecasts serve only PHI utility operations, and do not have responsibilities outside of these three utilities and PHISCo resources and activities supporting them. The Senior Vice President and the executives and staff that report to this executive are dedicated to the three utilities. In addition, the PHI CFO, Director, Financial Operations and the Vice President of Financial Planning and Analysis are also PHISCO employees dedicated to the operations, businesses and planning for the three PHI utilities and their support from the PHI holding company. PHI no longer has any diversified businesses or substantial unregulated activities, with those remaining at the time of the merger assigned to portions of the Exelon organization outside the EU group. The management focus of the PHISCO executives and employees lies exclusively upon the PHI utilities, including ACE.

We found no reason to view Exelon diversification activities as a negative influence on the operations supporting or focus on effective delivery of ACE utility service. First, Exelon overall has begun a course that places increased emphasis on its utility versus its generation and energy market business operations. Second, the commitments undertaken as part of the Exelon/PHI merger offered material strengthening of utility financial insulation against potential adverse financial performance from non-utility affiliate businesses. As Chapter V shows, Exelon and PHI have complied with the requirements that offer that insulation. Third, the elimination of non-utility business operations within PHI leaves a PHISCo organization totally focused on utility operations. Exelon has largely continued the technical and operational support roles PHISCo has traditionally filled in support of ACE. Moreover, the EU organization, as described throughout this report, brings a strong, performance-oriented approach to measuring and seeking to optimize utility performance across what has become a large utility enterprise offering strong leverage for and insight into best-practice sharing. We addressed ACE insulation from diversified activities extensively in the Finance and Cash Management chapter of this report, finding the protections that currently exist strong in protecting ACE's cash, liquidity, credit standing and financial viability from adverse consequences resulting from conditions, circumstances, or actions involving its holding companies or affiliates.

C. Conclusions

1. PHI/ACE missions, vision and strategic planning are effectively formed and executed at the Exelon Utilities level, and exhibit an appropriate level of attention to the needs of the PHI utilities in general and ACE specifically.

EU management and the strategic planning executives from each Exelon utility serve as primary drivers of visions, goals and objectives, strategic initiatives and overall strategic planning for the utilities. The most recent strategies chart an evolution that should keep Exelon among industry leaders in seeking to develop a full service customer approach in a changing industry.

Exelon plans to add customized, value-added products, such as generation and related services, including DER, financing options, and creative pricing, all sound concepts recognizing continuing industry evolution. At the same time, strategic planning recognizes the continuing importance of delivery of core services efficiently and effectively. The plans suit Exelon and customers well in providing readiness and flexibility as industry advances continue to emerge and mature, most likely in ways and at paces difficult to predict with certainty.

Strategic plans prepared at PHI by PHISCO personnel, based on the EU high-level strategic plans, ensure that strategic direction, initiatives, and baseline activities respond to local expectations, needs, and circumstances. Different priorities within each of the utility jurisdictions drive specific regional initiatives that are tailored to the needs of the PHI utilities. For instance, New Jersey has an energy master plan that has generated several strategic initiatives and projects. Specific initiatives are discussed and further developed at the PHI level and drive the strategic planning for the PHI utilities.

2. PHI/ACE business strategies are responsive to market conditions, customer impacts and resources required.

The EU and PHISCo strategic planning processes also specifically address emerging markets and new energy formats and businesses. Exelon's corporate strategy group broadly examines across all companies trends, new technologies, potential investments and potential business partners. EU has an over-arching vision of being a platform provider and providing data analytics for energy customers. In addition, electric storage and batteries represent a key emerging technology focus, especially at the PHI utilities; *e.g.*, PHI's participation and support of a 5 MW solar and on-site storage facility being built at Chesapeake College in Maryland. PHI also proposed establishment of a micro grid at Rockville in Maryland, and a DER is being developed that includes storage at a public facility. The New Jersey energy master plan has also generated PHI initiatives responsive to market evolution.

3. PHI and ACE goals and objectives are developed through a strong set of Key Performance Indicators constantly monitored and used to promote performance improvement at all Exelon Utilities operations, including ACE specifically, and PHISCo somewhat more generally.

Missions, goals and objectives are initially formed at EU for strategic planning purposes, and then refined at the PHI level for its three utilities. PHI business strategies and "Strategic Objectives" focus on four key priorities:

- Safety
- Reliability and Operational Excellence
- Regulatory Outcomes and Financial Accountability
- Engagement, Employee Development and Training.

The strategies developed would allow the PHI utilities to accomplish the following goals:

- Achieve 1st decile safety performance
- Achieve 1st quartile reliability performance
- Achieve 1st quartile customer satisfaction performance
- Foster strong employee engagement
- Continue to deliver on merger commitments
- Execute a regulatory strategy
- Align organizational headcount
- Integrate key IT systems.

The PHI goals for KPIs undergo review monthly, quarterly and annually, comparing actual performance with goals and objective performance metrics, in a range of categories. The categories include "Organizational Effectiveness" (safety, 12 metrics), "Operational Excellence" (reliability and operations, 53 metrics), "Customer and Stakeholders Satisfaction" (customer, 6 metrics), and "Financial Discipline" (5 metrics). Each metric has an "executive lead" responsible for performance to that metric.

4. PHI and ACE's operations and finances are properly and adequately separated and protected from Exelon's diversified, unregulated businesses.

The protection of ACE, Pepco and DPL from the risks of diversified activities became solidified and materially strengthened under the ring-fencing provisions required by the state commissions who reviewed the Exelon/PHI merger. The strong and "stand-alone" credit status of ACE with the major credit rating agencies demonstrates the strength of the protections.

We also examined the protections and procedures in place to protect ACE's cash, liquidity, credit standing and financial viability from adverse consequences resulting from activities of its holding companies or affiliates. Our review (as detailed in the Finance and Cash Management chapter) did not find any restrictions on the capital, debt instruments, and cash management of the utilities through the management of PHISCO or Exelon Treasury. The ring-fencing of PHI and the management and governance of the PHI utilities ensure that the credit ratings, utility financial standing, access to capital markets and utility cost of capital are without negative impact from the holding company or affiliates.

5. PHI and PHISCO management focus lies solely on its three utilities.

The PHISCO management team has full focus on the businesses, operations and strategies of the PHI utilities, including ACE, Pepco and DPL. The PHISCO executives involved in Strategic Planning and the LRP financial forecasts are all dedicated to the PHI utility operations, and do not have responsibilities outside of these three utilities and PHI. In addition, since PHI no longer has any diversified businesses or substantial unregulated activities, (any remaining have been transferred to Exelon Corp. outside of the EU group), the management focus of the PHISCO executives and employees are entirely upon the PHI utilities, including ACE.

6. Operational excellence and improved financial results are prime drivers for the PHI companies, as well as for Exelon /EU.

Exelon Corp.'s focus on utility investments and growth in rate base has been a strategic driver for the last few years, as well as in forecasted future years. Capital allocation to the Exelon utilities of $21 billion ($26 billion over five years) supports the rapid growth in rate base. ACE's capital plan is allocated approximately 3 to 5 percent of Exelon capital in the future, maintaining consistent utility investment, as is noted in the Capital Allocation chapter.

The forecasted financial results for the PHI utilities are also based on improving the ROE of each of the utilities, which have substantially lagged in financial performance as compared to the other, legacy Exelon utilities. The LRPs for PHI, which are built to meet both operational and financial strategic goals, emphasize meeting first quartile reliability performance. The LRPs also emphasize the need for financial performance improvement by the utilities, to improve PHI return on investment through more frequent rate case filings, improved regulatory mechanisms and better control over O&M expenses.

7. Capital allocation for PHI and ACE are strong within Exelon, and support strategic New Jersey programs.

The PHI strategic planning process provides guidance to PHISCO managers regarding the dollar levels, type and strategic initiatives and programs to pursue in their planning processes. In turn, the PHISCo Investment Strategy and Director, Financial Operations provide capital and O&M guidance to "category managers" in building the spending plans for ACE, DPL and Pepco. The PHISCO managers review the PHI strategic plans and consult to jointly provide the spending "targets", or acceptable ranges, for utility CAPEX and O&M spending. Investment Strategy also analyzes, evaluates and prioritizes projects, and makes project cuts if the bottom-up requests exceed reasonable spending levels. Target setting and project prioritization by the PHISCo managers are the practical results of the strategic planning/LRP processes, and comprise key steps in providing capital allocations for ACE that support New Jersey initiatives.

D. Recommendations

We have no recommendations in the area of Strategic Planning.

Chapter XIII: Finance and Cash Management Table of Contents

Chapter XIII: Finance and Cash Management

A. Chapter Summary

This chapter examined the finance functions that support ACE. Provided at the PHISCo level prior to the merger, these functions have increasingly become consolidated at the EBSCo level, although the PHISCo CFO continued to have a central role in their performance. The consolidation that has occurred has succeeded in reducing recent year's costs, placing their expected 2018 costs at very close to levels experienced four years ago in 2014.

EBSCo treasury operations and the CFO play the primary roles in determining the financing needs of ACE. They do so with the use of sound forecasting, proper consideration of current debt structure, and effective analysis of market conditions to optimize ACE financing costs. ACE has maintained an appropriate capital structure and one conforming to the merger commitments designed to protect the utility's financial strength. ACE has had effective and efficient access to capital markets, driven by the existence and satisfaction of capital structure targets that support optimum credit ratings. However, management needs to address ratings by two credit rating agencies that do not give ACE higher ratings than parent Exelon, despite what we view as particularly strong ring fencing measures.

ACE operates under a sufficiently sized credit facility and management has made effective use of commercial paper to optimize financing costs. Debt instruments are issued in ACE's own name and do not contain clauses or inferences permitting or suggesting the availability of its resources to satisfy obligations of the parent or affiliates. However, we consider it important for EBSCo Treasury and the PHISCo CFO to certify future debt agreements of ACE, affiliates, and the parent remain free of such entanglements of ACE assets and resources. A money pool structure and participation provide for the separation required by the Exelon merger commitments. However, ACE has not borrowed from the Exelon utility money pool, finding other immediate-term financing sources regularly less costly. Management performs effective cash forecasting in support of optimizing immediate-term financing.

The consolidation of investor relations at the Exelon level has produced economies and it continues to operate in a fashion typical of the industry.

B. Background

Financial management in a utility holding company structure typically provides the overall financial structure, policies, systems, resource allocation and funding required for the enterprise to execute its utility mission and responsibilities effectively. Traditionally, the financial management of an electric utility accounted, raised capital, paid bills, and requested rates for operations of the system. However, the forming of holding companies within the industry, the growth of non-utility affiliates and the development of competitive markets have in many cases increased financial pressure on or even interfered with the ability of subsidiary utility operations to carry out service functions - - in both direct and indirect ways.

The question of financial risk and separation of the utility from the finances and risks of affiliates is an important one. The positions of the major credit rating agencies on holding company financial relationships have evolved as experience with holding companies engaged in substantial non-utility operations has grown. That evolution has produced a prevailing view that all entities in a holding company structure influence the credit of all others, unless specifically sheltered by sufficient "ring fencing" approved by utility regulators.

C. Findings

1. The EBSCo Treasury Operations Organization

Financial management for ACE historically fell under the PHI CFO, who also acted as the Treasurer and CFO of ACE, DPL and Pepco. Major restructuring of the function followed the Exelon merger. The Treasury and capital markets, cash management, and rating agency relations functions have moved to Exelon Treasury, which performs operations under a Service Level Agreement. A Director of Exelon Business Services manages Exelon Treasury through a group of about 20 employees that perform treasury operations for each of the six Exelon utilities and other affiliates. The PHI CFO still signs financing documents and credit agreements as the financial officer of the PHI utilities, but the other Treasury operations performed by Exelon Treasury take place in Chicago offices.

2. Cost History

A number of significant changes in the organization have moved financial functions that support ACE from one organization to another, and, following the merger, from PHI's PHISCo service company to the Exelon-level EBSCo service company. Whatever those moves, financial functions in support of ACE have occurred at the service-company level. The best available means for looking at those costs is to show the combined costs distributed to PHI from both service company sources. The next chart shows that the significant consolidation of financial functions has reduced PHI costs in recent years, bringing them in 2018 to their historical 2014 levels. These numbers show management's adjustments to costs for movement of the reporting of certain costs among functions.

Combined Financial Function Costs to PHI

(Amounts in Chart are Confidential)

Function	2014A	2015A	2016A	2017A	2018B
CFO	[redacted]				
Tax					
Treasury					
Strat.& Financial Plng.					
TOTALS					
2018 Totals escalated at 2.5% from 2014 actuals					

Much of this chapter's discussion focuses on EBSCo Treasury and PHISCo CFO activities. The preceding table shows that the costs to PHI for these two areas have decreased since the 2016 Exelon merger. The next chart shows the details of the Treasury function's cost history, dating to before the merger, when such services came from the PHISCo level. The substantial change in 2018 reflects movement of treasury function costs to EBSCo, leaving only costs, such as those for debt issuances, directly within PHISCo.

Treasury Function Cost History

(All data in chart is confidential except for the two "ACE Share" lines)

Cost Category	2014A	2015A	2016A	2017A	2018B
Direct Costs and Salary Loaders					
Compensation[1]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Contractors	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Insurance	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Bank, Rating Agency, Other Fees	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Travel, Training and Meals	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Materials, Equipment, Other	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Salary Loaders[2]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Subtotal Direct & Indirect Costs	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Costs from Others					
IT	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Facility Space	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Fleet Vehicles	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
HR Employee & Payroll Service	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Other Crosscharges	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Subtotal Costs From Others	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
TOTAL COSTS	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
PHI Costs Seconded to EBSCo	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
EBSCo Billed to PHI	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Restatements	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Net Distributed to LOBs	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
ACE Share ($)	*$3,702*	*$3,757*	*$2,738*	*$2,753*	Not Yet Available
ACE Share (%)	*22%*	*22%*	*22%*	*23%*	

[1]Includes labor, incentives, stock-based compensation

[2]Benefits, payrolll taxes, pension, OPEB

The next chart shows PHISCo CFO costs. For budgeting and cost control, the costs of this function were combined in 2018 into a category consisting of Strategic Planning & Finance. Transitional costs for contractors drove the significant growth in CFO costs during the lead-up to the merger.

PHI CFO Cost History

(All data in chart is confidential except for the two "ACE Share" lines)

Cost Category	2014A	2015A	2016A	2017A	2018B
Direct Costs and Salary Loaders					*Combined with Strategic Planning & Finance*
Compensation[1]	[redacted]	[redacted]	[redacted]	[redacted]	
Contractors	[redacted]	[redacted]	[redacted]	[redacted]	
Leases, Depreciation, Amortization	[redacted]	[redacted]	[redacted]	[redacted]	
Travel, Training and Meals	[redacted]	[redacted]	[redacted]	[redacted]	
Materials, Equipment, Other	[redacted]	[redacted]	[redacted]	[redacted]	
Salary Loaders[2]	[redacted]	[redacted]	[redacted]	[redacted]	
Subtotal Direct & Indirect Costs	[redacted]	[redacted]	[redacted]	[redacted]	
Costs from Others					
IT	[redacted]	[redacted]	[redacted]	[redacted]	
Facility Space	[redacted]	[redacted]	[redacted]	[redacted]	
HR Employee & Payroll Service	[redacted]	[redacted]	[redacted]	[redacted]	
BSC Services (not IT)	[redacted]	[redacted]	[redacted]	[redacted]	
Other Crosscharges	[redacted]	[redacted]	[redacted]	[redacted]	
Subtotal Costs From Others	[redacted]	[redacted]	[redacted]	[redacted]	
TOTAL COSTS	[redacted]	[redacted]	[redacted]	[redacted]	
PHI Costs Seconded to EBSCo	[redacted]	[redacted]	[redacted]	[redacted]	
EBSCo Billed to PHI	[redacted]	[redacted]	[redacted]	[redacted]	
Restatements	[redacted]	[redacted]	[redacted]	[redacted]	
Net Distributed to LOBs	[redacted]	[redacted]	[redacted]	[redacted]	
ACE Share ($)	*$716*	*$1,376*	*$1,491*	*$471*	
ACE Share (%)	*22%*	*23%*	*23%*	*25%*	

[1]Includes labor, incentives, stock-based compensation

[2]Benefits, payrolll taxes, pension, OPEB

3. Financial Policies

Effective financial management requires sound, well-defined financial strategies and policies. Such financial policies need the ability to respond to changes in the financial marketplace without compromising the utility's core strengths. Strategic financial policies provide the proper foundation and flexibility for changing markets, yet strive for a low-cost financing structure.

Financial policies for ACE have traditionally been set by PHI Treasury. They have changed over a number of years, but have remained fairly stable since the Exelon merger in March 2016. Financial policies include setting high-level targets for capital structure and for dividend policy that shape the utility's capital structure. Financial policies also include a target credit rating that enables efficient external financing for ACE.

4. Capital Structure

Specific ranges exist for the ACE capital structure and cash flow metrics. They focus on meeting credit rating agency metrics and requirements for attaining desired rating levels. ACE's target capital structure calls for 50 percent equity and 50 percent debt, and has done so for a long time. ACE manages to an equity minimum of 48 percent, and to other ring-fencing commitments brought with the Exelon merger. The PHI Long-Range Plans target 50/50 capital structures in the long-term plans for all the PHI utilities. ACE also targets a Funds Flow from Operations (FFO) to Debt ratio (the most important credit metric) of above 16 percent, to maintain its current BBB+ credit rating with Standard & Poor's. The capital structure and cash flow metric targets have been set over a period of years in accordance with guidelines provided by the rating agencies.

The selection of BBB+ as a target credit rating for ACE considers the costs and benefits of various rating levels, as well as maintaining adequate utility financing flexibility. Strong investment grade ratings provide continuing access to capital markets, even should unforeseen events (such as the financial crisis 10 years ago) cause the loss of one or two rating "notches." Even a drop to BBB-, the lowest investment-grade rating, would maintain ACE's access to capital markets in more difficult financial and credit circumstances. ACE's rating target is also not overly conservative. Pursuit of a high A or AA credit rating, for instance, would result in a more-costly ACE financing structure.

5. Dividend Policy

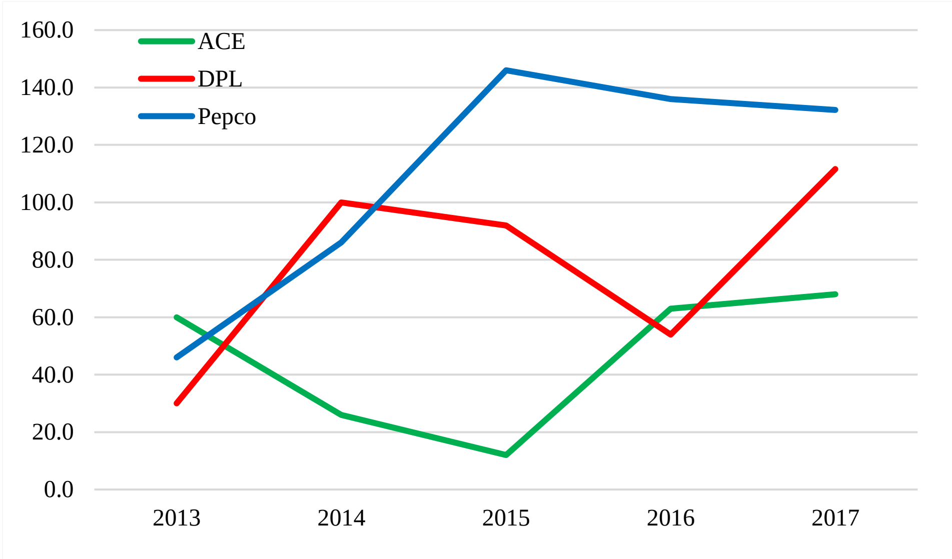
Dividend policies for enterprises like ACE must remain supportable and sustainable over the long term, relying on utility earnings and cash flow. The dividend policy calls for dividends of 70 percent of ACE earnings to PHI, with adjustments as required, to meet the target capital structure. A 70 percent payout of utility operating earnings serves as the target for all of PHI's utility companies. PHI passes dividends received from the utilities to parent Exelon. If a utility subsidiary's equity ratio is projected to exceed 52 percent, dividends of up to 100 percent of operating earnings may be made, subject to preserving an equity ratio between 50 and 52 percent. In accordance with the Exelon–PHI merger commitments, utilities cannot pay dividends if the dividend will cause the equity ratio to fall below 48 percent.

PHI no longer operates significant non-utility businesses, and has reduced its debt to $185 million as of the end of 2017. PHI as the parent of the three utilities effectively operates financially as a pass-through entity that transmits dividends to Exelon Corp. Of concern are situations whereby a holding company could use the dividend flow from its utilities to support high levels of debt at the holding company, making the entire holding company family riskier.

ACE and the other PHI utilities perform quarterly adjustments to tune their capital structures, dividends, and required equity injections. Quarterly meetings that include the PHI CFO and PHI Vice President – Financial Planning and Analysis, Exelon Treasury, PHI Legal, and PHI Regulatory drive an adjustment process that PHI has employed since well before the Exelon merger. We reviewed the ACE, Delmarva and Pepco dividends for each quarter from 2013 through 2017, as well as PHI dividends to shareholders from 2013-2015, and to Exelon for 2016 and 2017. A team that includes finance, regulatory and legal representatives determines quarterly capital structure and dividends after reviewing ACE financial results and forecasts. This team determines a net dividend level sized for consistency with maintenance of approximately equal equity and debt percentages. The following chart shows PHI utility dividends to the parent for 2013-2017.

Dividend Payments to PHI, 2013-2017

(millions of dollars)



The quarterly process begins with ACE dividends to PHI for distribution to Exelon, with the amount at about 70 percent of ACE earnings. If ACE needs additional equity after the dividend to meet its capital structure target, Exelon makes an equity contribution to ACE. It comes through the Special Purpose Entity (SPE) created as part of the merger's ring-fencing requirements and through PHI to ACE in a separate transaction. We reviewed these calculations and contributions for the PHI companies in 2016, 2017, and to date in 2018. For instance, ACE expected a fourth quarter 2018 equity contribution from Exelon of $79.9 million, to offset $100 million of ACE net, additional debt financing money from a bond issuance. ACE issued $350 million of First Mortgage Bonds in October 2018, as expected, with a $250 million maturity in the 4th quarter as well.

6. Investor Relations

The PHI Investor Relations function moved from PHISCo to Exelon following the merger in March 2016. A Finance Vice President managed the earlier, PHI Investor Relations organization, using the resources of a Manager, Investor Relations, a Manager, Shareholder Services and an Investor Relations analyst. PHI's accounting for investor relations costs traditionally included salary and benefits, travel, conferences, EEI fees and meetings, Thomson financial information subscriptions, and analyst research subscription fees. PHI had largely outsourced the pre-merger shareholder services function - - a typical industry approach.

Investor Relations manages the distribution of general company and financial performance information to existing and potential shareholders and investors. It serves as a clearinghouse and communications link between company management and the equity and fixed income (debt) investment communities. Through an external financial communications process, Investor Relations assists investors with understanding Exelon's operating and regulatory environments, historical financial performance, and expectations for future performance by answering detailed questions in a way that allows the investment community to appropriately model and value Exelon for investment decisions. The financial community also receives updates on financial performance through annual rating agency meetings and debt investor presentations.

Exelon Investor Relations now performs this function for the entire holding company and all of its subsidiaries, including its six utilities, Exelon Generation, other non-utility businesses and the holding company. EBSCo's Senior Vice President and Corporate Secretary and his subordinate, an Investor Relations Vice President, manage the work. The vice president's resources consist of a senior manager and a senior analyst.

The PHI CFO supports the Exelon IR function by providing quarterly PHI Long-Range Plan (LRP) information and charts, and confirming the accuracy of this information. The CFO also validates the quarterly earnings slide deck presented to the entire financial community and discussed in earnings conference calls. The PHI CFO also reviews the PHI financial data and charts, and provides updates on rate case status for all PHI cases. The PHI CFO also works in conjunction with Exelon IR on Q&A for the quarterly Exelon earnings calls. The CFO noted that recently Exelon investors are most interested in the PHI merger integration and status, and in Exelon Generation operations and markets.

Management reports no significant change in investor relations activities performed, but their performance now comes from a larger, integrated organization. Exelon has, however, now moved shareholder services from the finance organization to an EBSCo Senior Vice President and Corporate Secretary. Prior to the merger, shareholder services comprised the bulk of PHI's investor relations operating budget. Consolidation has, as the next chart demonstrates, produced a significant reduction in investor relations costs.

ACE Investor Relations O&M Costs

	2013	2014	2015	2016	2017
Actual	$263,350	$209,794	$174,620	$100,837	$33,422
Budget	$248,977	$274,074	$284,040	$132,229	$79,305

7. *Planning for Capital Requirements*

Sound planning for ACE financial requirements underlies utility access to sufficient capital on a timely basis at reasonable rates. Such planning requires evaluations of long-run financial requirements, including financing plans for the next five years.

Planning for ACE capital requirements comes as part of the PHI Long-Range Planning (LRP) processes - - addressed at length in Chapter V of this report, *Capital Allocation*. This planning process identifies annual ACE earnings and cash flow and the capital requirements that must be funded. The "internal funding" of capital expenditures by operating earnings and cash flow generally do not prove sufficient to fund planned capital expenditures fully. The long-range planning process identifies external funding requirements, and produces a financing plan from the PHI CFO and Vice President – Financial Planning and Analysis for each year of the forecast. The financing plan for ACE comprises part of the PHI Long-Range Plan eventually approved by PHI executives and the PHI Board of Directors, followed by reviews and approvals from Exelon Utilities and Exelon Corp. at levels above PHI.

PHISCo's Financial Planning and Analysis group plays a primary role in capital requirements planning as part of its long-range planning activities. The Vice President of this group joined PHI after the Exelon merger closing, previously working in and managing Financial Planning at Baltimore Gas & Electric and at Exelon Corp. Following the announcement of the Exelon/PHI merger, the Vice President worked in the Exelon Project Management Office (PMO) for two years on merger preparation and implementation issues, operating in conjunction with the PHI CFO.

The PHI Financial Planning and Analysis group evaluates projected ACE income statements and cash flow analyses undertaken as part of the long-range planning process. This work identifies the internal cash flow available to fund capital expenditures. Bottom-up five-year plans come from PHI Technical Services and Financial Operations. Following evaluation and project prioritization, the PHI CAPEX and O&M plans go to Financial Planning and Analysis, which builds the plan. Working plans include rough financing plans designed to meet projected ACE, Pepco and Delmarva external financing requirements. The financing plans consider the operating cash flow produced in each year, dividends, debt maturities and capital expenditures needing funding.

PHI CFO and the PHI CEO review of the five-year plan under development, and examine and refine financing plans for each utility, identifying the proper mix of debt and equity to maintain capital structure targets. The five-year plan then goes to the Exelon level for review by Exelon Utilities and top corporate executives, before consideration by the Exelon Executive Committee and its board of directors.

The LRP 2.0 process (explained in the Capital Allocations chapter) re-profiles PHI's five-year plan between October and January. Evaluations in this period update and refine proposed capital expenditures, O&M costs, and pension information. Utility financing plans also undergo updating. An updated long-range plan is presented to the PHI Board of Directors in early February.

8. Credit Ratings

ACE has a corporate credit rating of BBB+ at Standard and Poor's, with a secured rating (for ACE First Mortgage Bonds) of A. At Moody's Investors Service, the ACE corporate credit rating is Baa2, with a secured rating of A3. Fitch rates ACE as BBB, the same level that Moody's designates. Ratings for ACE secured securities have a two-notch-higher rating at the rating agencies, supported by the strong asset collateral security provided by utility first mortgage bonds. All Exelon utilities had a corporate credit rating of BBB+ or A- with Standard and Poor's; however, ACE had lower, Baa2/BBB ratings at Moody's and Fitch, respectively. PHI, ACE, Delmarva and Pepco each have a corporate credit rating of BBB+ and an A-2 commercial paper rating with Standard and Poor's. Commonwealth Edison, PECO Energy Company, Exelon Generation, and Exelon holding company have BBB corporate credit ratings, while Baltimore G&E has the highest corporate credit rating at A-. The next table summarizes the ratings of ACE and its parent companies.

Corporate Credit Ratings

Entity	S&P	Moody's	Fitch	FMB	Commercial Paper
ACE	BBB+	Baa2	BBB	A/A3	A-2/P-2
PHI	BBB+	Baa2	BBB	None	Withdrawn
Exelon	BBB	Baa2	BBB	None	A-2/P-2

f. ACE Credit Ratings

The rationale for the ACE BBB+ credit rating at Standard & Poor's includes an "Excellent" (best of six levels) business risk evaluation and a "Significant" (fourth best of six) financial risk rating. The assessment of ACE business risk reflects the company's lower risk, rate-regulated electric transmission and distribution businesses, and that ACE's comparatively high percentage of residential and commercial customers provides greater cash flow stability. Standard & Poor's notes:

> *Overall, we assess the company at the lower end of the range for its business risk profile category compared with (utility) peers. This reflects the company's historically challenging regulatory environment that although is gradually improving, requires definitive longer-term consistency.*

Regarding ACE's financial risk, S&P has stated that:

> *In our view, the company's strong financial measures (such as FFO to debt forecast at a strong 24%) offset its relatively weaker business risk profile compared to (utility) peers…. we only weighted our forward looking forecasted years when determining ACE's financial risk profile category.*

Standard & Poor's uses group rating methods in rating utility subsidiaries. S&P has assigned parent Exelon Corp. a group credit profile of BBB. S&P rates ACE one notch higher than the Exelon group credit profile, due to the strength of ACE's stand-alone credit profile and the structural protections (ring fencing) that insulate ACE. The insulating measures identified by S&P included:

- Maintenance of various separateness provisions, including separate records and books of account.
- ACE can only participate in the PHI money pool.
- Restrictions on dividend distributions, such as maintaining equity to capital of 48 percent or more.

Fitch also considers ring fencing measures as supporting ACE credit ratings, but rates ACE the same as the Exelon holding company.

Moody's and Fitch rate ACE lower at Baa2 and BBB, respectively. Moody's has cited more concern with ACE earnings and cash flow, noting that:

> *The earnings lag is driven in large part by declining revenue due to lower customer electric usage resulting from its service territory's weak local economy, coupled with investments in rate base and increased operating expenses outpacing revenue growth.*

However, Moody's also believes that Exelon will improve the ACE credit picture:

> *... we think Exelon will be successful in deploying certain best practices across ACE's operations which will improve several of its current operating metrics, reduce regulatory lag and raise customer satisfaction.*

As of March 14, 2018, ACE was assigned a "Positive" outlook by Moody's, reflecting the improved perspective.

ACE's first mortgage bonds benefit from a first priority lien on substantially all of the utility's real property. With strong collateral coverage, the ACE first mortgage bonds are rated A and A3, or two ratings notches above the respective ACE corporate credit ratings.

a. PHI Credit Ratings

PHI holds a corporate credit rating of BBB+/Baa2/BBB by Standard & Poor's, Moody's and Fitch, respectively, the same ratings as ACE. The PHI business risk is also rated as "Excellent" and its financial risk "Significant," given Delmarva and Pepco subsidiaries risk profiles similar to that of ACE. The PHI business risk assessment falls at the lower end of the Excellent range compared to its utility peers, also reflecting "historically challenging regulatory environments" considered to be gradually improving. The business risk rationale is generally the same as that used for the ACE credit ratings. Regarding financial risk, Standard & Poor's expects an FFO to debt ratio of about 20 percent in the future for PHI.

Standard & Poor's rates PHI as one notch higher than the Exelon BBB group credit profile, citing the strength of its stand-alone credit profile and the structural protections that insulate PHI from its parent. Key insulating measures for PHI identified include:

- An independent board of directors at the SPE that owns the equity of PHI
- SPE votes required for bankruptcy filings
- PHI cannot rollover or refinance existing debt obligations
- A non-consolidation opinion.

The PHI standalone credit profile is rated BBB+. The ring fencing, including the SPE immediately above PHI, causes its status within the Exelon group to be considered by S&P to be "insulated", but with no impact on its credit ratings.

Moody's has stated the opinion that the Exelon merger was "credit positive" for all the PHI utilities, while Standard & Poor's was "somewhat positive" for the merger's impact on the PHI utilities. None of the PHI or ACE credit ratings changed following the Exelon merger, however.

b. Exelon Credit Ratings

Exelon Corp. has had consistent corporate credit ratings of BBB/Baa2/BBB with S&P, Moody's and Fitch, respectively. The parent has the same rating as its lowest-rated subsidiary - - Exelon Generation. S&P cites a "Strong" Exelon business risk profile and a "Significant" financial risk profile. Exelon's business risk profile reflects projections that the lower risk of its rate-regulated utility businesses will account for about 60 percent of Exelon earnings, and the higher-risk Exelon Generation merchant business will account for about 40 percent. The utility business portion is expected to trend towards 70 percent in the future, from rate base growth and rate increases. Standard & Poor's expects that Exelon Generation's merchant business will continue to face constraints from weak power prices and challenging capacity prices, with limited upside. Moody's and Fitch have similar opinions regarding Exelon Corp. business risks and strategy.

Exelon's Funds From Operation (FFO) to debt ratio comprises a primary measure of financial risks. S&P expects the Exelon financial measures to be "consistent with the middle of the range for the "Significant" financial risk credit profile, or a ratio of 17 to 21 percent. Before the merger with PHI, S&P required a higher ratio for Exelon to maintain the same BBB rating. The PHI acquisition has lessened the financial metric requirements of Exelon because it increased the proportion of lower-risk utility businesses in its consolidated portfolio. The Exelon group credit profile of BBB matches the Exelon stand-alone credit profile.

According to Exelon financial management, Exelon's strategy before 2011 sought a "balance" of earnings from utilities versus merchant generation, believing that these businesses operated as natural hedges against each other. Peak Exelon Generation earnings came in the 2007 and 2008 time frame, but recent challenges in the merchant power sector have made the unit's earnings volatility a concern. Exelon's strategic priorities shifted towards growing its utility platform, primarily investments that drive reliability and operational performance. The 2011 Constellation acquisition comprised Exelon's first strategic move to reduce the effects of volatility in its merchant earnings. Nevertheless, Exelon continued heavy capital allocations to Exelon Generation. An even stronger shift toward utility business emphasis in the Exelon portfolio occurred with the announcement of the PHI merger in 2014. The PHI merger caused utility earnings to become the majority of the Exelon portfolio earnings, and proved clearly credit-positive for Exelon. Since the closing of the PHI merger, capital allocation to Exelon Generation has lessened.

9. Debt Financing

Responsibility for managing external financing operations and debt securities issuances moved to the Treasury group at EBSCo following the March 2016 merger, in accordance with a "Service Level Agreement" between PHI and EBSCo. The PHISCo CFO discusses with EBSCo long-term debt funding needs and maturities for the three PHI utilities, with EBSCo then performing required external financing and cash management activities. The capital markets group at EBSCo Treasury coordinates long-term debt issuances for ACE and the other PHI utilities, working with the PHISCo CFO. The Exelon Capital Markets team has six members - one senior manager, two managers and three senior analysts who perform capital market execution (for debt and equity issuances) and treasury planning for all six Exelon utilities.

Each Exelon and PHI utility corporate entity issues debt in its own name with security from the issuing entity's assets and operations. ACE scheduled a first mortgage bond issuance for the fourth quarter of 2018. In October, ACE issued $350 million of 10-year First Mortgage Bonds with a coupon rate of 4.0 percent. These bonds refinanced a $250 million debt obligation maturing, and add $100 million of new funding to pay down outstanding ACE commercial paper. PHISCo financial leadership had previously identified 10- and 30-year first mortgage bonds as the primary options under consideration for ACE, with term (length) selection determined on the basis of market analysis immediately before issuance.

The EBSCo capital markets group generally plans to issue first mortgage bonds to meet debt funding needs for each of Exelon's utility entities, except BGE, which does not issue debt against its mortgage. This group works with investment bankers to research markets and interest rates for a variety of debt maturities, including 5, 10 and 30 years. Generally, the capital markets group has found 10 or 30-year first mortgage bonds the most efficient debt vehicle for the utilities, given a very deep pool of interested institutional investors. First mortgage bonds and other secured debt vehicles commonly prove very attractive to such investor pools, and attract the most favorable interest rate pricing. The EBSCo capital markets group evaluates and derives a plan for ACE debt offerings based on current market conditions, the maturities of existing ACE debt, future capital needs and the eligibility of ACE debt for "re-opening." The capital markets group uses a number of major U.S. and international investment banks to underwrite its public offerings or act as placement agents for private offerings. CitiBank, Bank of America/Merrill Lynch, JP Morgan Chase and Barclay's have been "Tier 1" syndicators on Exelon utility debt issuances, which also include about 25 banks selected by the capital markets team from Exelon's broader lending facility.

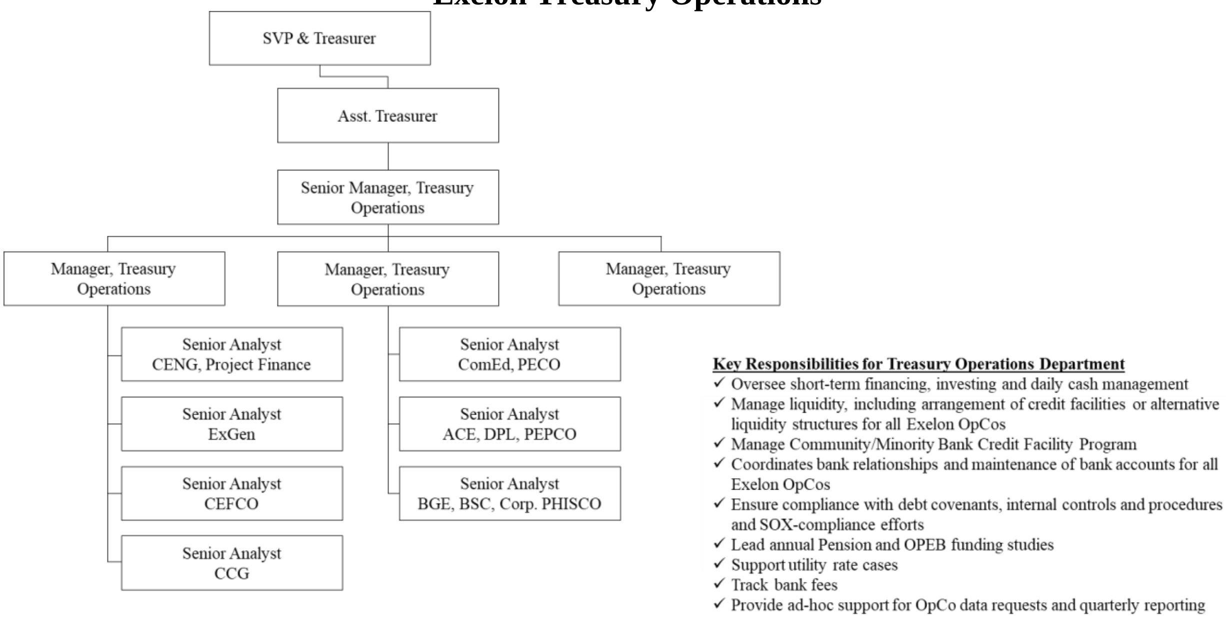
ACE expected to base its 2018 bond issuance on a Bond Purchase Agreement similar to that used for its most recent, 2015 issuance. We reviewed that Bond Purchase Agreement for ACE's $150 million First Mortgage Bond issuance dated December 1, 2015, which predated the Exelon merger closing. That issuance primarily considered 10- and 30-year maturities, the yield curve, ACE's maturity schedule, and market demand for 10- versus 30-year issuances, making a final selection on term just prior to the bond pricing. The issue came in the form of a private placement. The $150 million level comprised a small, "non-index" issuance that did not meet the size investment criteria of some major institutional investors. "Index" bond issuances of $300 million or more have greater attraction for institutional investors, and command interest rates 10 to 15 basis points below those of smaller, non-index issuances.

We also reviewed the existing ACE Bond Purchase Agreement documents to determine if they include either holding company or affiliate operations financial interties that could have negative implications for ACE. The documents we reviewed do not include potential encumbrances on utility assets, any guaranties or support agreements in the favor of affiliates, cross-default or Material Adverse Change clauses, or other interties with the potential for producing negative impacts to ACE.

10. Cash Management

The cash management function for the PHI utilities also moved to EBSCo Treasury following the merger. A senior manager in EBSCo directs a 10-employee team whose responsibilities include cash management. Four of the analysts and senior analysts perform the cash management operations for all six of the Exelon utilities, including PHI's three, reporting to a Treasury Operations manager. One cash management analyst addresses ACE, Delmarva and Pepco, a second handles Commonwealth Edison and PECO, and a third handles Baltimore Gas & Electric, Exelon Business Services, Exelon Corp. and PHISCO. An organization structure for Exelon Treasury Operations is shown in the chart below.

Exelon Treasury Operations



A second Treasury Operations manager and four analysts perform cash management for Exelon Generation and its unregulated lines of business. One analyst is assigned to Exelon Generation, and the other three to other unregulated lines of business (CEFCO, CCG, CENG and Project Finance).

11. Commercial Paper Programs

Management reports no changes to the Exelon cash management operating model and commercial paper operations since the 2016 merger. EBSCo Treasury Operations manages and operates individual commercial paper programs for each of the Exelon entities and other major subsidiaries. Individual commercial paper programs are operated and commercial paper issuances take place in the name of each of the three PHI utilities, Commonwealth Edison, PECO, BG&E, Exelon Generation, and the holding company, for example. The ACE, Pepco and Delmarva commercial paper programs are fully separate from each other. PHI no longer issues commercial paper, and has withdrawn its credit ratings for it. A limited amount of bank borrowing remains at the intermediate-level holding company.

Cash management analysts stay in contact with five commercial paper dealers daily. These market sources provide overnight commercial paper rates for each individual company. [redacted] The cash management analysts each receive a daily morning email from all five commercial paper dealers. Treasury Operations has found the price for commercial paper on an overnight basis for individual companies generally the same at all of the dealers. If one dealer offers a lower price, the analysts will contact the other dealers to see if they will match. Almost all Exelon entity commercial paper is "overnight" - - the most liquid and lowest-rate vehicle. The senior manager also notes that commercial paper investors do not have much appetite or interest in longer maturities such as 7, 30 or 90 days.

The PHISCo CFO receives a "Daily Cash and Available Liquidity Executive Summary" report from Treasury Operations. We reviewed representative examples from 2016, 2017 and 2018. A Daily Cash report from July 2017 showed Pepco with a $146 million cash balance while ACE was simultaneously borrowing $20 million dollars through commercial paper. We asked whether Pepco might lend to ACE through the PHI money pool in this situation. EBSCo management responded that ACE issuance of its own commercial paper would be "cleaner" and that all three PHI utilities would be borrowing at the same interest rate, negating potential advantages in using the money pool. With all three PHI utilities rated the same at A2/ P2, there usually is no difference in commercial paper borrowing rates between the Exelon utilities; only PECO holds a higher rating.

We also reviewed pricing quotes from the commercial paper dealers used. Interest rates have increased for utility overnight commercial paper borrowing from about 65 basis points in October 2016 to 140 basis points in July 2017 to 180 basis points in February 2018, and to 2.25 percent in May 2018.

PHI provided tables measuring the historical average, minimum and maximum short-term borrowing or investing for each month from 2013 through 2017. We found ACE consistently in a "borrowed" commercial paper status through 2013, 2014 and 2015, reaching a peak in November 2015 of $253.3 million. A debt issuance of $150 million in December 2015, as well as equity injections from the parent companies resulted in ACE cash balances from January 2016 through April 2017, when ACE borrowing resumed.

We also reviewed short-term debt and cash balance information for the PHI holding company from 2013 through 2017. PHI holding company short-term borrowing grew to $1.36 billion by the March 2016, Exelon merger closing. Short-term borrowing balances then fell to $500 million in May 2016, where this level of borrowing remained until March 2017, when PHI paid the outstanding commercial paper, closed its commercial paper program and withdrew its credit ratings.

12. Cash Forecasting

PHISCo-based personnel continue to forecast utility external capital needs; the Long-Range Planning processes includes rough long-term cash forecasting. PHISCo projects month-end cash positions for two years, and year-end balances for the final three years of five-year plan horizons. Shorter-term cash forecasting (used for cash management operations) occurs as part of EBSCo's responsibilities for cash management. Daily forecasts estimate cash positions for each individual company across the next seven days. The cash management analysts receive information from individual departments (*e.g.*, payroll and other major payables, many of which recur monthly).

However, with almost all commercial paper issued on an overnight basis, the analysts apply a very short-term focus. Nevertheless, the pendency of a large debt maturity or other major, non-cyclical payment can produce longer-maturity commercial paper matching of the maturity date, should it produce lower costs. EBSCo Treasury Operations occasionally uses seven-day issuances, but very rarely anything longer.

Liberty reviewed examples of the standard, seven-day cash forecasts used for ACE cash management during 2016, 2017 and 2018. The seven day forecasts include key cash items such as payroll, taxes, and long-term debt payments. To this forecast, cash analysts add information from daily morning accounts payable reports. They then determine commercial paper issuance levels and tenors.

13. Credit Facilities

ACE must have a line of credit to provide liquidity back-up for its commercial paper program. Prior to the Exelon merger, the PHI utilities had an August 1, 2011, $900 million credit facility. Wells Fargo served as lead, with Bank of America, JP Morgan Chase and Mizuho Bank as co-syndication agents. A May 26, 2016 restatement of this credit agreement folded the existing facility into the Exelon group credit facility.

As part of the merger, the existing Exelon credit facility was amended and extended to cover the PHI utilities. PHI, a borrower under the prior credit agreement, was excluded from the extension. The new $9 billion facility arranged covers all Exelon companies. JP Morgan Chase served as credit facility lead arranger, along with Wells Fargo, the PHI lead bank. The credit facility includes a syndicate of over 20 additional banks. This credit facility's primary use for Exelon utilities is to liquidity back-up, enabling each to issue commercial paper.

The new Exelon credit facility includes borrowing capability for up to:

- $5.3 billion for Exelon Generation
- $600 million for Exelon Corp., the holding company
- $1 billion for Commonwealth Edison
- $600 million for PECO
- $600 million for Baltimore G&E
- $300 million for Pepco
- $300 million for Delmarva
- $300 million for ACE.

We reviewed the extensive May 26, 2016 restated credit agreements for all the Exelon entities, including Exelon corporate, BG&E, Commonwealth Edison, PECO, the PHI utilities and Exelon Generation. All these credit agreements resulted from extensions of existing credit agreements, with the addition of PHI to the Exelon group. The PHI utilities now have the same lending syndicate as the other Exelon companies, with all companies part of one credit facility.

A $900 million restated credit agreement for the PHI companies combined (the "Fourth Amendment to Second Amended and Restated Credit Agreement" dated May 26, 2016) comprises an attachment to the current Exelon credit facility. ACE's intermediate PHI-level holding company (termed "PHI LLC" following the merger) is not an authorized borrower under the new credit agreement. The current PHI credit facility limits borrowing by each of the three utilities, giving each an initial sub-limit of $300 million. Pepco and Delmarva have the ability to "flex" up to $500 million. ACE can only do so to a maximum of $350 million. Its maximum sub-limit is the lesser of $500 million or the maximum amount of short-term debt ACE is authorized to have outstanding. ACE has a commercial paper authorization level of $350 million, hence providing the limit of its ability to flex under the $900 million credit agreement.

The pricing schedule of this credit agreement applies the credit ratings of each utility, producing a series of pricing levels. ACE falls at the agreement's third pricing level based on Standard & Poor's and Fitch ratings, and the fourth (higher priced) level under its lower Moody's credit rating. However, EBSCo Treasury management advised that this split status qualifies ACE for the lower-prices of the third level.

ACE participates in a PHI money pool with Delmarva and Pepco through an agreement dated November 3, 2016. ACE is not a participant in any Exelon money pool, as addressed in the Conclusion 10 below.

14. ACE Financial Insulation

Financial interties with affiliates or access to equity capital and liquidity that have the potential to harm utilities comprise a primary source of risk justifying utility insulation. The concept of "ring fencing" the utility to the greatest degree possible without unduly restricting the commerce of affiliates offers solutions to these risks - - solutions that have a multi-decade history of application. We examined the protections and procedures in place to protect ACE's cash, liquidity, credit standing and financial viability from adverse consequences resulting from conditions, circumstances, or actions involving its holding companies or affiliates. Ring fencing, from a financial interaction perspective, can take the form of restrictions on the capital, debt instruments, and cash management of the utility. The goal of such ring fencing insulation is to ensure that credit ratings, utility financial standing, access to capital markets and utility cost of capital are without negative impact from the holding company or affiliates, and to protect the utility from financial contagion caused by affiliates.

In the case of ACE and PHI, financial insulation formed a core element of the commitments required as part of the approval of the merger with Exelon. The result of these deliberations was an extensive list of "ring fencing" protections in the form of merger commitments made by Exelon that were required by jurisdictions to gain approval of the merger.

In addition to the merger commitments applicable here, certain processes and procedures in place at many utility holding companies provide utility protections from potentially detrimental influences due to association with the holding companies and affiliates. Chapter VIII, *Merger Conditions*, provides substantial background and findings on ACE financial and operating protections, conclusions about compliance with merger commitments, and recommendations for changes we found in order. We discuss financial insulation as well in conclusions that follow, primarily focused on consistency of financing arrangements and documents with the objective of providing financial insulation for ACE.

D. Conclusions

1. ACE credit ratings reflect its own business and financial criteria, without substantial hindrance or encumbrance associated with its holding companies or affiliates.

Credit rating reports for ACE confirm that its own financial standing sufficiently drives its ratings. For instance, the rationale for the BBB+ credit rating at Standard & Poor's includes a specific business risk evaluation and a financial risk rating based on ACE credit metrics. The assessment of ACE business risk reflects the company's lower risk, rate regulated electric transmission and distribution businesses, and that ACE's customers are mostly residential and commercial, providing cash flow stability.

The rating agencies generally consider ACE "insulated" from the Exelon group and its affiliates due to the strong ring fencing in place as a result of Exelon merger commitments, including the SPE that was placed between PHI and Exelon. The Merger Conditions chapter of this report specifically addresses two categories of ring fencing that cause the financial insulation relied upon by the rating agencies: "SPE and Golden Share" provisions, and "Financial Separation" provisions. Both Standard and Poor's and Fitch cite and describe ring fencing measures as insulating ACE and supporting its credit ratings in their reports. Moody's has also stated that the Exelon merger was "credit positive" for all of the PHI utilities, counter to any concerns of potential financial contagion from Exelon and its affiliates. The ACE credit ratings did not change at any of the rating agencies as a result of the Exelon merger.

The most important implication of ACE credit ratings arises in their application to new issuances of first mortgage bonds. The October 2018 $350 million ACE first mortgage bond issuance came under the company's credit standing and strong collateral coverage, which result in A (S&P) and A3 (Moody's) secured credit ratings that will minimize debt financing costs.

2. ACE is effectively ring fenced from the financial performance and operations of Exelon and Exelon Generation, but Moody's and Fitch ratings do not yet fully reflect the strength of the ring fencing and improving ACE metrics. *(See Recommendation #1)*

Substantial ring fencing commitments came with the Exelon merger. The Merger Conditions chapter addresses them, finding them substantially compliant. The credit rating agencies take keen interest in the ring fencing protections for the Exelon utilities, and have weighed in on their strength in their rating reports.

Standard & Poor's uses a "group rating methodology" in rating utility subsidiaries. S&P assesses Exelon Corp. as the ultimate parent of the group, with a group credit profile of BBB. ACE is rated one notch higher than the Exelon group credit profile because of the strength of ACE's standalone credit profile and the structural ring fencing protections in place that insulate ACE. With an Exelon group credit profile of BBB, the ACE status within the Exelon group is considered "insulated", and ACE is rated one rating notch above the Exelon group rating at S&P. Fitch also specifically details ring fencing measures as supporting ACE credit ratings.

However, Moody's and Fitch each rate ACE's corporate credit rating at the same level as the Exelon holding company, or Baa2/BBB, which we find inconsistent with ACE's improving credit metrics and the strong ring fencing in place. Standard and Poor's has focused on strong and improving credit metrics forecast for ACE in future years, versus Moody's focus on poor credit metric results in 2016 due to merger costs and charges. Moody's revised the ACE "credit outlook" to positive in March 2018, but has not yet upgraded the credit rating.

EBSCo Treasury should concentrate on producing greater consistency among the agencies to maximize resulting ACE corporate credit ratings, thereby optimizing financing costs.

3. Financial policies and procedures addressing capital structure and dividends adequately address optimization and protection of ACE capital.

Specific targets apply to ACE's capital structure, dividends, and cash flow metrics, all cornerstones of effective and efficient utility financial management. The capital structure and cash flow metric targets have been set over a period of years in accordance with the framework and metrics set by rating agencies for each rating level, specifically including those deemed appropriate for optimizing electric delivery utility financing access and costs. The selection of BBB+ as a target credit rating for ACE takes into account the costs and benefits of various rating levels, as well as maintaining adequate financing flexibility for the utility.

The target capital structure for ACE has remained at 50 percent equity and 50 percent debt for an extended period. Management also targets an FFO to Debt ratio of well above 16 percent to maintain its current BBB+ credit rating with Standard & Poor's. Similar, parallel metric targets at Moody's and Fitch apply as well. As noted in the previous conclusion, however, work remains with respect to Moody's and Fitch credit ratings for ACE.

Management uses effective quarterly processes to ensure continuing maintenance of ACE capital structure at target levels. ACE's dividend policy offers appropriate flexibility in providing for quarterly offsetting adjustments to equity capital to maintain ACE's targeted capital structure. In accordance with the Exelon–PHI merger commitments, utilities cannot pay dividends if the dividend will cause the equity ratio to fall below 48 percent.

4. EBSCo's capital markets group has a proper role, structure, staffing, and in executing ACE debt issuances.

External financing operations and debt securities issuances transferred from PHI to EBSCo Treasury following the March 2016 merger. PHISCo's CFO provides input to Exelon Treasury regarding maturities and the long-term debt funding needs for its three utilities, but EBSCo Treasury performs the actual external financing and cash management operations.

5. EBSCo efficiently performs cash management and provides proper liquidity access for ACE.

EBSCo's Treasury Operations manages and operates individual commercial paper programs for each of the Exelon entities and major subsidiaries. Individual commercial paper programs are operated and commercial paper is issued in the name of each of the three PHI utilities, as well as for Commonwealth Edison, PECO, BG&E, Exelon Generation, the Exelon holding company and other unregulated programs. Exelon cash management analysts remain in contact with five commercial paper dealers on a daily basis, who provide overnight commercial paper rates for each individual company.

Previous to the Exelon merger, the PHI utilities had a $900 million credit facility with a syndicate of banks led by Wells Fargo, Bank of America, JP Morgan Chase and Mizuho Bank as co-syndication agents. The credit agreement governing this credit facility was restated as of May 26, 2016, which effectively folded the facility into the Exelon group credit facility.

6. The establishment of funding requirements for ACE capital expenditures follows effective forecasting and planning.

ACE performs its planning for capital requirements through the PHI Long-Range Planning (LRP) processes. This process identifies projected monthly and annual ACE earnings and cash flow, as well as the capital requirements that must be funded. Internal funding of capital expenditures by operating earnings and cash flow generally does not prove sufficient to fully fund utility capital expenditures, requiring external funding through commercial paper and debt issuances and equity injections from the parent. Such external funding requirements are identified through the planning process, which requires a financing plan from the financial leadership within PHISCo (the CFO and the Vice President – Financial Planning and Analysis) for each year of the forecast. Financing plans undergo further refinement through appropriate, informed processes as the long-range planning processes continue.

7. The ACE long-term debt and credit facility agreements do not create interties that jeopardize the utility's financial insulation. *(See Recommendation #2)*

Our review of the ACE Bond Purchase Agreement for the December 2015 issuance looked for provisions that would tie ACE directly or indirectly to the satisfaction of obligations of the parent of affiliates. We found no potential encumbrances of utility assets, guaranties or support agreements in the favor of affiliates, cross-default or Material Adverse Change clauses, or other provisions with the potential for obligating ACE to pay or making its assets reachable for debts and obligations not its own. The documents supporting the ACE October 2018 First Mortgage Bond issuance were not available at the time we drafted this chapter, but it is critical that their provisions also exclude any such inter-ties with affiliates or holding companies.

Liberty also reviewed the restated credit agreements for all of the Exelon entities and the extension of the PHI utilities credit agreement, each dated May 26, 2016. Exelon Treasury notes that all of the credit agreements were extensions of the existing credit agreements, while adding the PHI utilities to the Exelon group. The credit agreements did not have any troublesome financial interties, support agreements or cross-defaults in the agreements.

8. The EBSCo Treasury group has established separate cash management and bank account structures for ACE; they provide for its liquidity and they secure its financial insulation.

Dedicated cash management analysts perform cash management for each operating company and for each utility, including ACE. EBSCo Treasury personnel manage and operate individual commercial paper programs for each of the utility subsidiaries. The ACE borrowing needs are planned for and executed by a single dedicated Exelon Treasury analyst, who has responsibility for ACE, DPL and Pepco. The ACE commercial paper program is operated and commercial paper is issued in the name of the company. ACE is also part of a credit agreement for commercial paper liquidity purposes that includes only the three PHI utilities as the sole borrowers, thus insulating this credit agreement from the other credit agreements in the Exelon group.

Bank accounts are separate for each of the Exelon entities; more than 100 bank accounts exist within the Exelon companies. [redacted] Access to the bank accounts and systems is very restricted, and excess cash is segregated within each company's accounts.

PHI several years ago had liquidity issues stemming from the operations of its energy markets subsidiary, PES. A previous credit agreement allowed PHI to appropriate portions of its utilities' credit capacity, a provision PHI used to re-assign utility liquidity and borrowing capacity, to the detriment of the utilities. The new credit facility in 2016 specifically removes PHI from the credit agreement as a borrower, which acts as a ring fencing shield to protect the borrowing capacity of ACE from appropriation by affiliates or holding companies.

Liberty notes that the New Jersey ring fencing also prohibits intercompany loans. Exelon intercompany receivables are settled monthly; EBSCo provides for their settlement on the 15th of every month, with no carryover allowed.

9. Neither the Exelon nor the PHI money pools have negative consequences or pose risk for ACE.

Exelon operates a money pool at the holding company level, and PHI has a money pool for its three operating utilities. ACE is not a participant and has never been a participant in the Exelon money pool. Our review of the legal participation list and ACE records shows no indication of such participation. Merger commitments preclude ACE from participating in Exelon money pools.

The PHI money includes the three utilities, PHISCo, and the intermediate, PHI-level holding company. ACE may participate in this money pool, but only to the extent that transactions involving it provide lower than market rates for ACE commercial paper, its normal borrowing vehicle. ACE has not participated in the PHI money pool since the Exelon merger closing. According to the PHISCo CFO, fellow utilities Pepco and Delmarva have generally not had funds available in the money pool for ACE to borrow. ACE could borrow from the PHI money pool if Exelon made a contribution through PHI for these purposes. However, the Exelon funds would be available at a higher cost than ACE incurs in issuing its commercial paper - - the utility's cheapest source of funds.

10. Exelon has efficiently transferred PHI Investor Relations functions to its own operations, reducing the costs to ACE.

The PHI Investor Relations function has been moved to Exelon following the merger in March 2016. The previous PHI Investor Relations organization was managed by an IR manager reporting to the PHI CFO and Senior Vice President - Finance. Exelon IR performs this function for the entire holding company and all of its subsidiaries, including its six utilities, Exelon Generation, other unregulated Exelon businesses and the Exelon holding company. Exelon IR is managed by the Exelon BSC Senior Vice President and Corporate Secretary and his subordinate, the IR Vice President. Exelon IR has performed the function for ACE and the other PHI utilities since the merger, reducing the costs to ACE by more than one-half.

E. Recommendation

1. Prioritize improving ACE credit ratings at Moody's and Fitch. *(See Conclusion #2)*

The ACE corporate credit ratings and secured credit ratings at Moody's and Fitch are lower than at Standard and Poor's by one ratings notch. In addition, DPL and Pepco are rated higher at Moody's than ACE. Liberty has noted that Moody's "indicated rating" for ACE from its own analysis grid is Baa1, but notches ACE downward to the Baa2 level in its ratings reports.

The PHISCo CFO explained management's views on why Moody's ratings for ACE were lower. Moody's upgraded industry participants several years ago, including Pepco and DPL. However, ACE and a few other utilities did not receive upgrades at that time, primarily due to regional economic issues, such as casino closings.

S&P considers ACE credit metrics solid on a going-forward basis, justifying a higher than Baa2/BBB rating. ACE also operates under comparatively strong ring fencing, as Fitch also recognizes. ACE should be rated at least one ratings notch higher than the Exelon holding company based on its own credit metrics and the strong ring fencing and SPE in place above PHI. Exelon Treasury should make it a priority to obtain increased corporate credit ratings and secured (First Mortgage Bond) ratings for ACE with Moody's and Fitch in the near future.

2. Verify the continuation of language that does not implicate ACE assets or operations in future financing documents. *(See Conclusion # 7)*

The Bond Purchase Agreement for the ACE December 2015 first mortgage bond issuance was properly devoid of provisions establishing or implying any availability of ACE assets or resources for the satisfaction of debt of its parents or affiliates. EBSCo Treasury and PHISCo CFO should undertake responsibility to ensure that the same remains true for future issuances of ACE debt and of debt by parents and affiliates. An officer of EBSCo Treasury and the PHISCo CFO should have the power and the responsibility to certify such absence and compliance with merger commitments based on personal examination and knowledge of all current and future ACE debt documents.

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Chapter XIV: Accounting and Property Records

A. Chapter Summary

Until early 2018, PHI accounting operated as part of an integrated enterprise resource planning process that used a variety of SAP modules and functionalities as its platform. Beginning at the start of 2018, Exelon integrated many but not all of the accounting systems, tools, and processes with its own. Exelon's companion system, its Exelon Performance System (EPS) relies on an Oracle-based general ledger accounting system. Both SAP and Oracle operate as industry leaders to large American enterprises.

The integration of Exelon and PHI approaches and platforms leaves in operation many legacy PHI systems and modules, which have been effectively interfaced where required with the EPS. We found no gaps or weaknesses in the organizations, systems, methods and procedures related to accounting and property records. The general review of accounting controls performed here found them effective. We have undertaken more detailed reviews of specific areas, forms and subjects of controls elsewhere in this report, making separate conclusions, and, if appropriate, recommendations in the chapters addressing them.

Our examination of accounting for special cost recovery mechanisms, and non-rate-related revenues also found them to be addressed by appropriate organizations, methods, processes, and controls. Our testing of them did not find reason for concern.

B. Background

This chapter address accounting and property records, special cost recovery mechanisms, and non-rate-related revenues.

We examined key accounting processes that, unless carried out properly, can have significant negative effects on the financial well-being of the utility, its parent, or both. The underlying systems that process the various types of transactions, such as labor, invoices, and manual and system-generated journal entries, serve important roles in ensuring accurate accounting and charging for all transactions. In addition, controls must be sufficient to assure that what is reflected in utility accounts serves adequately to meet regulatory needs in examining and setting rates. Accounting processes that are sufficient to meet these needs depend on internal controls and reporting measures that affect the reliability of the books and records, and financial reports.

Financial reporting encompasses external and internal reporting systems to support management required reporting and external filing requirements. The external reporting process provides for compliance reporting of financial and statistical data to external companies and agencies; *e.g.*, federal and state regulatory agencies. Internal reporting provides financial and statistical data to management for use in operations. Financial reporting systems and processes exist for both types of reporting. The customer accounts receivable (AR) system provides for billed revenues and records the customer's accounts receivable and revenues on the books of the regulated companies.

Utility approaches to budget tracking and analysis often are heavy on the former and light on the latter. This of course tends to sacrifice the essence of good cost management which focuses not on the identification and reporting of issues, but the analysis and corrective response to those issues. We therefore believe it is essential to separate the pieces of cost analysis as a function of the needs, with the needs being financial on the one hand and management on the other. Cost management and analysis in this context is an operational and technical challenge, as opposed to a cost collection or accounting chore.

C. Findings

1. *Operating Costs*

Exelon has undertaken a substantial consolidation of activities under the controller function since 2016. The following chart shows the reduction in ACE costs following that consolidation.

Controller Costs

(all amounts above the "Total Costs" line are confidential)

Cost Category	2014A	2015A	2016A	2017A	2018B
Direct Costs and Salary Loaders					
Compensation[1]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Contractors	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Leases, Depreciation, Amortization	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Travel, Training and Meals	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Materials, Equipment, Other	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Salary Loaders[2]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Subtotal Direct & Indirect Costs	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Costs from Others					
IT	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Facility Space	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Fleet Vehicles	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
HR Employee & Payroll Service	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Other Crosscharges	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Subtotal Costs From Others	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
TOTAL COSTS	***$22,296***	***$23,904***	***$24,519***	***$17,228***	***$12,444***
PHI Costs Seconded to EBSCo			-$2,588	-$3,023	
EBSCo Billed to PHI			$6,414	$13,357	$12,607
Restatements				($1,332)	($2,167)
Net Distributed to LOBs	***$22,296***	***$23,904***	***$28,345***	***$26,230***	***$22,884***
ACE Share ($)	***$4,697***	***$5,272***	***$4,917***	***$3,151***	***Not available***
ACE Share (%)	***21%***	***22%***	***20%***	***18%***	

[1]Includes labor, incentives, stock-based compensation;
[2]Benefits, payrolll taxes, pension, OPEB

2. *Financial Policies*

a. Key Accounting Systems

The Exelon Corporation merger with PHI was completed on March 23, 2016. SAP was PHI's Enterprise Resource Planning (ERP) system supporting the accounting and reporting through the December 2017 year end closing and audit period with several SAP features continuing on a standalone basis within Exelon's EPS post integration. Exelon's accounting and reporting system is supported by the EPS, which is an Oracle-based general ledger accounting system. PHI's accounting systems were integrated into Exelon's accounting systems effective January 1, 2018.

Management provided its SOX System Interface Flowchart and the 2018 SOX System Interface Flowchart, developed by IT resources with input from the internal controls group. The ACE SOX System Interface Flowchart depicts PHI/SAP pre integration accounting and financial systems. The 2018 ACE SOX System Interface Flowchart depicts the PHI and Exelon accounting and financial system interfaces and integration post integration. The flowchart shows how PHI's financial modules interface and how data flows into Exelon's financials and general ledgers (EPS) and then into Exelon's Hyperion Financial Management system. The Hyperion system is where consolidation processing and reporting occurs for PHI and Exelon companies.

SAP, a leader in the industry, provided the backbone supporting PHI, PHISCo, and ACE accounting. PowerPlan, predominately used by utility and power companies, drives asset accounting, including continuing property records, Construction Work in Progress (CWIP), Allowance for Funds Used During Construction (AFUDC), and depreciation. PowerTax, yet another leading provider, supports tax management. SAP provides for the repository of financial data and statistics with which various financial modules and systems interface, collect and report data as shown the ERP flowchart.

SAP served as PHI's ERP System through December 31, 2017. The SAP chart depicts the various financial platforms, databases and modules that process and store data for accounting, analysis and reporting purposes. It also shows the flow of data from one module, system, or database to another. SAP has modules that can interface with other accounting systems. SAP's modules can also run independently of each other. Some of the modules included in SAP ERP are the general ledger (Financial Accounting (FI), Controlling (CO) - Cost Accounting, Federal Energy Regulatory Commission (FERC) Accounting, Project Maintenance, Payroll, Accounts Payable, inventory, accounts receivable, purchasing, personnel etc. Other major systems are: PowerPlan which includes the PowerTax and Fixed Asset modules processed in PowerPlan: the SAP Customer Relationship Management & Billing (CRM&B) that includes the front end web-based system where other modules within CRM&B house customer data and process metering, bills and customer invoices, and the Work Management Information System (WMIS) that provides job work flow process for construction and maintenance work from work initiation, through engineering, scheduling, construction and recording the activities through the accounting close process.

The SAP ERP system has been integrated within Exelon's Hyperion Financial Management system. The SAP accounting systems and modules, other than the general ledger and accounts payable systems, continue to function as standalone modules. They interface with Exelon's Hyperion system post integration. The legacy PHI general ledger system, with the exception of project billing and invoicing from the SAP billing system, has been moved to Exelon Performance Systems (EPS). The accounts payable process has been moved to the Asset Suite 8 which is Exelon's accounts payable module. The SAP Customer Relationship Management & Billing (CRM&B) continues to bill invoices and process accounts receivables as a standalone module pre and post integration. The PHI/SAP PowerPlan system (including PowerTax) continues to operate within the Exelon PowerPlan system, not changing post-merger. The month-end closing process has also continued following the integration of former PHI systems with those of Exelon. Exelon Tax Allocation processes and agreements, in effect at Exelon pre integration, continue to be used.

b. Major Accounting Modules

We reviewed the following major accounting modules through interviews and review of company-provided documents. See Chapter IV, *Cost Allocation Methods* for a detailed discussion of the intercompany cost accounting process. Internal controls are an inherent part of PHI's and Exelon's accounting processes as supported by process narratives and the flow charts step by step processes. The internal controls are depicted in key steps within the processes. See Chapter IX, *Executive Management and Governance* (Section H) for a detailed discussion on accounting controls.

There are two main financial accounting modules within SAP, FI and CO and are stand-alone modules. The FI module is used for external reporting and the CO module for internal reporting. The FI module is by legal entity, i.e., for Securities and Exchange Commission (SEC) purposes, and the CO module is by line of business (LOB). The FI provides the general ledger and supports external reporting requirements, such as SEC filings for the 10Q and 10K reports. Exelon's Work/Webfilings module is used similarly to the Edgar Filer software PHI used for compliance and regulatory reporting and filings.

The CO module collects capital and detailed cost accounting data for internal management control and reporting and serves as the cost accounting module. It allows management to monitor actual revenues and costs (capital and expense) against planned amounts at a business-unit process level of detail. It also provides for variance analysis to support management oversight. Service company cost allocations also take place in this module. The CO module does not include balance sheet accounts or transactions. All transactions get recorded initially as expense. The Project System maintains balance sheet accounts and transactions. Project System maintains and accumulates charges for capital projects. The Project Costing module resides within the CO Module. It accumulates and tracks costs by project. The CO module records capital costs initially as expenses, but a settlement process within SAP converts capital costs (expenses) to balance sheet items, using the FI module. The conversion of capital costs recorded initially as expenses, are "settled" back to capital costs, based on a profile code set within the SAP system. Capitalized overheads provide an example of capital costs recorded in the CO module.

There is an internal control process, the FI/CO reconciliation that verifies net income by legal entity (FI module) and LOB (CO module) are in balance. Generally, transactions recorded in the CO module are simultaneously recorded in the FI module. The purpose of this control is to ensure that all numbers have been reconciled between the two modules.

Exelon's general ledger system (EPS) operates on an Oracle platform. This platform, similar to the legacy PHI system, sets up operating units to keep accounting of transaction data structurally separate. Some of the Exelon systems' EPS accounting units consist of business units and departments, others comprise legal entities that provide a structure for external reporting. The legacy PHI system operated similarly. Business units comprise the highest levels in the organization structure; *e.g.*, the consolidated Exelon enterprise, a major division, or an operating company. The EPS Chart of Accounts (COA) includes the natural account (general ledger account), organizational accounts and cost centers (departments), again similar to the legacy PHI SAP-based system. The COA captures incomes statement items; *e.g.*, operating revenues, operating expenses, taxes). The balance sheet COA includes assets and plant-related costs (*e.g.*, Plant In Service (PIS) and (CWIP). The balance sheet COA includes various liabilities and equity accounts. Exelon operates under an Associate Transaction Procedures Manual, which describes the accounting procedures and processes that apply to accumulation of costs in cost centers (again like SAP) related to affiliate transactions.

PowerPlan serves as PHI's Asset Management and accounting software. It maintains Continuing Property Records (CPR), processes CWIP transactions, calculates AFUDC, and addresses depreciation expense. Jurisdictional accounting, which identifies costs by state jurisdiction, occurs in the PowerPlan system. ACE operates in only one jurisdiction; therefore jurisdictional allocations are not used in PowerPlan for ACE.

PowerTax serves as PHI's tax management software. Management uses it to maintain and calculate taxes, including items such as tax deferrals and accruals. PowerTax interfaces with PowerPlan and other systems and modules to access tax assets by jurisdiction and to calculate tax depreciation. PowerPlan offers the PowerTax and Fixed Asset modules programs which have wide use and acceptance in the utility and energy industry.

The PHI legacy SAP Customer Relationship Management & Billing (CRM&B) billing system and accounts receivable process has continued as a stand-alone system post integration. CRM&B interfaces with Exelon's EPS. A front-end, web-based system, CRM&B houses customer account data (Business Master Data). A back-end system (Technical Master Data) processes metering and customer billing.

The AR module includes the accounting for customer billings and the collection of customer payments. SolutionOne is PHI's customer billing platform associated with SAP's CRM&B. In addition to billing customers, SolutionOne posts payments and returns according to jurisdictionally approved payment posting priority. The remittance process includes the customer payments and collections which are a part of the meter to cash cycle. Within this process, there are two general sub-processes. The collections process is the first and includes the daily collection of cash received from customers, the application to the respective customer accounts and the reconciliation of cash posted to CRM&B to cash received. The customer deposits is the second process which includes the calculation, collection and subsequent repayment of security deposits on customer accounts. The collection of the deposits follows the same process as the standard utility collections.

Exelon's Asset Suite 8 – Accounts Payable system processes accounts payable transactions for PHI and ACE post integration. Asset Suite 8 replaced a legacy SAP accounts payable system. Exelon's Asset Suite 8 offers a responsive, multi-window graphical user interface (GUI) with point and click capability for user ease. The accounts payable module includes two fully integrated modules for invoicing and payments. Invoice Workbench enters, adjusts, and reviews invoices. Payment Manager creates, adjusts, and reviews payments. Both invoices and payments are batch processed. Various actions can be performed while the invoices and payments are processed, such as finding all validated invoices with a range of invoice dates.

As did SAP, Exelon's Asset Suite 8 processes accounts payable transactions, posting expenses and capital costs from invoices to the general ledger using costs collectors (*e.g.*, cost centers) business unit identifiers, and other identifiers. Inherent system internal controls identify any document mismatches, which operates as a bar on processing pending review of discrepancies. A three-way matching process allows accounts payable personnel to match invoice, receiving document (receiver) and purchase order to ensure that what has been ordered has been received and invoiced correctly. Invoices can be approved line-by-line (rather than invoice total). Accounts Payable personnel can only review the line items for which they have view and approval authority. Another internal control feature within the system allows the user to assign operating units to a security profile, and then assign the security profile to valid users. The ledger permits running standard payables reports, such as the invoice register (posted invoices to the general ledger), payment register (posted payments to the general ledger), and the accounts payable trial balance that lists invoice and payment transactions by operating unit for defined time periods.

The AP module posts expenses and capital costs to the general ledger accounts from invoices received, in addition to other and more detailed cost collectors. Examples of these other collectors include cost centers, internal orders, and projects (which track improvements to capital assets). The AP module also supports the corporate payment function. The function supports issuing checks for multiple companies and generating check registers for periodic reconciliation. There is a Corporate Approval Process that outlines the steps and controls for invoice, commitment and expenditure approvals and payment, management accountability, etc. The AP process includes controls such as three way matching and separation of duties. Three-way matching allows the AP personnel to match the invoice, receiving document (receiver) and the purchase order to ensure that what has been ordered has been received and invoiced correctly. If any invoice does not meet this control, the invoice is blocked and a report is produced for management to review and correct the issue. The separation of duties allows for compliance of SOX requirement where each invoicing group must be composed of at least two individuals. For example, a person responsible for coding and a different person to review and approve the invoice.

3. *Accounting Processes*

a. <u>Construction Work In Progress and Plant in Service</u>

The CWIP process records, tracks, and monitors capital expenditure projects. Management also uses the Project System module in SAP to maintain and accumulate charges for capital projects as part of its work order system. PHI’s legacy systems for CWIP, PowerPlan and the Fixed Asset modules, continue to be used as standalone modules post integration. The CWIP process entails the coordinated efforts of business units operations and engineering, accounting, and capital planning personnel. Capital plans identify capital expenditures for plant construction. The work flow process for CWIP begins with a work request for a construction project from the WMIS system. Work orders get set up in the CWIP general ledger to capture costs and activity related to the work order, categorized by elements including labor, material, AFUDC, and capitalized overheads to be applied. Work completed for affiliates is subject to the same procedures and controls as other capital projects. Within the work order procedures, there is an internal control process that monitors CWIP and ensures timely closure of capital items. The WMIS and PowerPlan system supports the Construction Work in Progress (CWIP) review process by providing monthly updates for work order requested completion dates. The PowerPlan system also provides for specific alerts while projects remain under construction. The PowerPlan alerts come as part of the SOX 404 compliance requirements.

When management determines that the plant involved is ready to provide service to the customer, the work order is deemed in service. Upon notification and required documentation provided by the engineering group to the accounting group, all charges recorded in the CWIP general ledger Account 107 transfer to the PIS Account 106 – Unclassified Plant. At this point, the plant-in-service begins to be depreciated, and can be included in rate base for rate making purposes. After receipt of the work request and work order close forms/as-builts by the accounting personnel from the project owner or WMIS interface, the work order is closed, and charges get transferred from the PIS Unclassified Plant category to Classified Plant. Management makes use of procedures and reports in place for the reconciliation of the utility's rate base to continuing property records. We reviewed company-provided documents that include work papers supporting the rate base items, procedures how each rate base item is determined, and the reconciliation of the rate base items to the general ledger accounts.

We reviewed accounting's asset project flow charts that document the CWIP process. The flow charts include internal controls at significant points of the process, and provide the ability to document process risk and issues where required. Examples of controls within the CWIP process relate to management approvals, monitoring and tracking charges, project scheduling and closings. Assets are recorded and transferred from CWIP to the proper PIS property records within the general ledger to ensure the property units are recorded correctly and accurately. The Asset Accounting group and the business units review the list of property units annually to ensure that the property units are in fact utility assets. The utility plant assets are classified per the Units of Property catalog. There are utility plant assets that are not included because they are non-routine in nature and are reviewed by Company personnel. These non-routine capital projects are typically projects from Information Technology, Facility Services or Telecom. Before the capital costs and units are recorded on the books, the business operations personnel determine whether the projects meet the capitalization criteria as set by the capitalization policy. We found there are internal controls in key spots throughout the CWIP and PIS accounting process.

As a result of the PHI and Exelon merger there has been an alignment of certain PHI capitalization policies post-merger (change from PHI to Exelon capitalization policies). The changes relate to asset transfers and relocations, temporary services and the timing of capitalized labor costs for new meter installations. We discussed these changes with Company personnel to determine if there was a significant impact to PHI's financials. Management responded that capitalization policy changes were reviewed with the external auditors, PwC, and determined the dollar impact to be insignificant.

We reviewed and assessed procedures to account for partially completed work orders. Generally, most projects or jobs get closed when placed in service. However, partially completed work orders are sometimes closed and placed in service. This designation occurs when personnel determine that a portion of the work order has been completed, and is providing service to utility's customers, while work remains on the remainder. For example, jobs closed and placed into service have on occasion been reopened to capture costs for restoration work that continues after the work order has been closed. The business unit requests Asset Accounting to open these jobs manually, in order to apply charges after job closing. The PowerPlan system then closes the charges to the assets during the charge unitization process. The unitization process updates continuing property records after projects get closed to PIS. However, during the audit period there were no partially completed work orders, that all work orders were kept open until totally completed and closed to PIS.

The accounts for jointly owned utility and non-utility assets in their continuing property records. Examples of jointly owned assets are Exelon's electric plant and transmission facilities, including the ownership interest of ACE and other affiliates. The plant assets are identified separately by location using the same process as other capital projects discussed earlier. The consolidated balance sheet includes its proportionate share of assets and liabilities related to jointly owned assets. ACE records its share of the operating and maintenance expenses of jointly-owned assets in the corresponding expenses in its consolidated income statements. There are no jointly owned utility assets between the parent (PHI) and ACE.

b. Internal and External Accounts Receivable

The customer AR system accounts for billed revenues, and records customer accounts receivable and revenues on the books of the operating utilities. Personnel from Revenue Accounting, Credit & Collections, Special Billing, and Corporate Accounting participate in the billing and recording of the accounts receivables and revenues to the general ledger. Separate accounts receivable systems exist for internal (affiliate billings) and external (customer billings) systems. Intercompany transactions involving receivables and payables automatically get posted to each company's general ledger. For cross-company charges, the system automatically creates accounts receivable for the company providing the services and accounts payable on the books of the company receiving the services or products. Treasury Cash Management manages the intercompany settlement process during the month-end closing process. Management stated there is currently no difference between internal and external reporting of accounts receivable.

For any required adjustments, appropriate journal entries are prepared, reviewed, and processed through the SAP system. There also exists a process for recording the unbilled accounts receivable and revenues. Unbilled revenues comprise those generated from customers whose services have been received in the current reporting month, but for which billing will occur in the following month. Reconciliation procedures and control sheets ensure the accuracy of billed and unbilled revenue data, after which final posting to the general ledger occurs. Management provided procedures on how it handles aged accounts receivables through its dunning process. The aging method takes place by sorting a company's accounts receivable according to the dates of unpaid customer bills, usually for 30, 60 and 90 days past due. Dunning describes the credit and collections process used to ensure payment and collection of past-due customer receivables. It describes all considerations, processes and activities utilized to encourage billed customers to pay their overdue balances.

We reviewed the internal audit reports from 2014 through 2017 to determine if audits were performed for customer accounts receivable. We found no specific audits for SolutionOne accounts receivables, but there were associated internal audits related to customer remittances, rate migration process, special billings, and large commercial billing accounts. All recommendations and issues have been resolved and remediated. We also reviewed the 2014 through 2017 affiliate inter-company accounts receivable and payable accounts and found fluctuations to be normal timing differences.

c. Accounts Payable Processes and Controls

The accounts payable process comprises the payment of invoices for the purchase of goods and services from vendors. We examined the AP process documentation, supporting flow charts and internal controls for critical decisions or process steps within the accounts payable process and system. The flow charts include the process steps from the initial receipt of invoices, and proceeding through invoice processing, payment of invoices, and recording of transactions to the general ledger.

The Corporate Approval Policy is an integral part of the AP process. The policy outlines the management approval levels and timing required to determine if requisitions for goods or services should be approved for purchase. Approved vendors are located in the Vendor Master File Database. Reviewing the vendor list determines whether an approved vendor exists in the Master Vendor File. There are detailed procedures and controls surrounding additions and changes to the Vendor Master File. Accounts payable personnel work with the utility requesting goods or services to ensure the use of the proper forms (*e.g.*, a W-9, vendor Tax Identification Number form, and vendor update form). Following proper completion of required forms by the requesting unit, AP sets up the vendor payment and accounting screens necessary to support requisition and invoicing. When vendors submit invoices, the AP system identifies whether the invoice is related to inventory items or other type of purchases. If not for inventory items, AP reviews the invoice and directs it for proper processing within the system, which includes system checks and edits.

The CAM supplements the formal AP processes and procedures documentation. The CAM addresses payment of invoices for the purchase of goods and services from outsiders by one affiliate on behalf of another. The service company usually pays invoices, under what are termed convenience payments, payments made on behalf of one or more affiliate companies. The affiliate company is then billed for their share of the invoice cost. A service agreement between the service company and the affiliates controls the assignment of costs associated with such payments. There also exist procedures for processing and accounting for purchases for multiple affiliates on one invoice (termed "joint purchases"). Management prefers that vendors invoice each affiliate separately, but does permit joint purchases, provided that the vendor accurately apportions invoice costs. The accounts payable department provides training and instruction on allocating joint purchases costs. We also reviewed the 2014 through 2017 affiliate inter-company accounts receivable and payable accounts and found fluctuations to be normal timing differences.

Internal Controls

Numerous critical and key internal controls apply throughout the process. These controls include preventive and detective controls. Accounts payable preventive controls include such items as the Corporate Approval Policy and accounts payable invoice process for approval and posting of vendor invoices. Other preventive controls include three-way matching of documents (the purchase order, receipt of material or service, and the invoice), daily review of invoices uploaded by the LOB's, and monthly review of AP reconciliations. Detective controls include weekly audit expense reports and credit card reviews and audits. Key internal controls apply to each critical step in the AP process, seeking to ensure compliance with requirements that include AP user access policies, electronic funds transfers and approvals, and vendor change verifications, for example.

We reviewed the policies and procedures that support the accounts payable function from a process flow and training perspective. We examined these documents to verify that the accounts payable function employs appropriate documentation and operates under appropriate internal controls. FI (SAP's financial and general ledger module) and PO (purchase order) invoice processing dictates how the accounts payable system processes invoices. Training documentation provides a high level process flow illustrating the accounts payable invoice process. For example, it addresses procedures and timing for invoice receipt, completion of invoice costing, approval by managers, and recording the invoice into the AP and general ledger systems. The documentation lists the personnel skills required in accounts payable, focusing on experience with SAP, and addresses management approval requirements. Management stresses the use of checks and balances in the invoice payment process, which occurs through separation of duties and responsibilities. For example, the employee requesting payment of an invoice should not be the same person that approves the payment of the invoice. The training section addresses invoice preparation, vendor coding procedures, required invoice detail, accounting expenditure coding, and approval by management.

The documentation emphasizes the importance of the Corporate Approval schedule, and identifies spending limits and an approval list by name and position. The PHI Corporate Approval Policy provides guidelines for management accountability, granting approval authority, assignment of approval levels, commitments and expenditures, and allowable dollar limits. The document addresses specific approval levels by management position, the associated dollar limits for the position, and the type of expenditure (expense or capital). The document also identifies requirements that an employee must follow when approving an invoice. For example, it identifies positions that need to review contracts before approval, approvals related to settlements for claims or lawsuits, types of transactions requiring special approvals, and who can approve an invoice. An explanation of the funding process for capital and Operating and Maintenance (O&M) planning and expenditures helps employees understand how dollars are generated for future expenditures.

Internal Audits

Internal Audit performed three audits of the accounts payable function during the audit period. Management provided a schedule of audit findings, recommendations, and actions taken by management on the accounts payable systems and processes audited.

The audits performed were:

- 2013 Disbursements and Dolphin Audit performed in 2014
- 2015 Disbursements Audit performed in 2015
- 2016 PHI Disbursements Review performed in 2016

The 2013 Disbursement and Dolphin Audit addressed the effort to automate processing for all PHI. The Audit report rating was Some Improvement Needed. Recommendations were related to lack of segregation of duties, risk of duplicate payments, and invoice approval within employee job responsibilities. The 2015 Disbursements Audit reviewed and evaluated the compliance of the automated accounts payable processes. The audit report rating was Some Improvement Needed. There was one recommendation to update the vendor master records. The 2016 PHI Disbursements Review addressed the disbursement and control environment for reasonableness and to assure that risks are being managed and objectives met. The audit report rating was Effective, and no issues found. We found that management reported corrective actions on all of the recommendations with the rating of Some Improvement Needed.

d. Payroll Process and Controls

We reviewed the payroll flow documentation for the payroll processing function, controls and the process for accounting for payroll costs. We addressed both the continuing PHI legacy SAP processes and those applicable to Exelon time and payroll. Effective with the first payroll in 2018, PHI transitioned to Exelon's time and payroll process. We examined Exelon's time and payroll process (ePeople HR Systems Resources Payroll & Time Tracking) effective January 1, 2018.

The payroll processing function has resided in the HR Services department pre- and post-integration. In the legacy SAP payroll module, PHI's payroll and time processes have interfaced with human resources employee systems and engaged treasury personnel. The Exelon payroll process includes parallels with the legacy PHI systems and methods. Employees, or time administrators on their behalf, enter time weekly or semi-monthly. A calendar provides deadlines for time entry, the number of payroll processing days, and employee pay date. Pre-integration, various PHI managers at certain approval levels can approve their own time and those of their direct reports. Below those approval levels, PHI managers could be given authority to only approve their direct reports. The PHI's payroll department approves employee time if it is not approved by the reporting deadline. The employee's manager/supervisor is alerted by the payroll department to approve overtime, if any.

Error verification processes divert timesheets to the appropriate review process, based on a decision tree format. The CATS system also verifies employee eligibility using updated wage and system codes provided by the HR department. The payroll accounting office personnel run a time entry audit report to verify that all time reported for a pay period have undergone the required review. Any errors triggered get corrected by the employee or timekeepers in CATS, after which the timesheets return to the payroll process flow. The payroll group approves all time entered, and runs a payroll simulation to check for postings to the FI and CO modules. If errors are found, the errors are routed for follow up by the Corporate and Asset Accounting group. When payroll reaches an error free state, the payroll data is posted to the FI and CO modules. The system generates interface/controls and payroll journal entry reports. For example, the payroll personnel reconcile hours transferred from CATS to hours processed in the payroll system. Another important internal control feature is when the payroll processing department notifies the business unit cost centers to review their payroll before final processing of payroll.

The reporting structure of the payroll processing department supports internal control through segregation of duties. No person has more than one area of responsibility. The processing of payroll occurs in the HR Services and Disbursement department, while the administration of employee data takes place in the human resources department. This approach provides for segregation of duties, which comprises a key internal control. The HR Services and Disbursement department calculates employee earned wages. The HR department administers employee data, providing wage rates and other employee data used in the payroll processing function. Management provided a detailed listing of PHI's internal controls that govern the processing of payroll under SOX 404. A detailed narrative describes the internal controls, which are identified by a Control ID, and linked to a specific process having a unique Process ID and description. The documentation identifies the owners of specific payroll processes. The internal controls also identify the type of control and the frequency it occurs within the process. An example of an internal control for payroll processing function follows.

Control ID: CA C-101870
CAT system verifies the employee's eligibility using updated wage and SAP codes.
Preventive Control

The payroll process flow documents include the internal control ID to allow one to determine where a particular control takes place during the process. Two control types exist in the internal control process: preventive and detective. Preventive controls attempt to deter or prevent undesirable events. They represent proactive controls that help to prevent a loss, for example. Detective controls seek to discover any problems within processes.

e. Payroll Accounting and Cost Allocation

Once the time is entered, verified and processed, the payroll accounting associates and supervisors prepare and review all payroll reports for accuracy. One set of reports compares the hours paid and recorded in the general ledger with headcount reports provided by human resources. These reports provide a basis for trend analysis to identify variances. If variances are noted, the LOB personnel must provide explanations. Once explanations of variances are approved and no other variances are found, the report is approved by the payroll supervisor and filed.

After all internal controls such as approvals, verifications, evaluations and comparison of payroll data by the payroll accounting and LOB personnel are completed and error free, payroll is processed for payment. The payroll accounting associates prepare Electronic Funds Transfers (EFT) requests for vendors and banks. The EFT is forwarded to the payroll supervisor for review and approval. This process identifies any differences between third party payments and the payroll journal. Accounting personnel review funding for payroll tax liabilities and other employee deductions. This internal control ensures the proper deductions for payroll taxes; e.g., social security, state unemployment, insurance, and retirement plans. Any errors get rerouted through the payroll process for correction. Once all variances and errors are explained and corrected, the payroll supervisor runs a report to confirm all changes are posted to the cost centers in the CO module. The payroll accountant emails the Funding Classification sheet to the bank to confirm transmission of payroll funds. Once confirmed from the bank, the Funding Classification sheet goes to Accounts Payable and Treasury for payment and funding. Exelon's ePeople HR Systems Resources Payroll & Time Tracking system interfaces with Exelon's cash processing and banking system (Wallstreet Treasury Workstation) and with Exelon's (EPS) Financials & General Ledger system for posting payroll costs.

The journal entries to record the payroll and to fund the payroll paid to employees are recorded to the appropriate company's general ledger. On a monthly basis, the payroll accountant uses various control reports to reconcile other payroll related accounts for payroll activity. Discrepancies are investigated and corrected and then approved by the payroll supervisor. The payroll manager reviews the reconciliation and journal entries (if any) and signs off on the report.

During or after the payroll process, if any payroll configuration changes such as wage type changes, the payroll personnel discuss the proposed changes with the IT group before changes are made to the system. The payroll supervisor provides the final approval to IT to make the appropriate change in production.

The service company provides various support services, one of which is the payroll function. The payroll department is a shared services department within the PHISCo, which provides payroll services to all PHI companies, including ACE. Affiliates receiving services from the service company pay for them through direct charges or by allocations. Accounting for payroll costs includes the recording of capital costs for accounting hardware and software. These costs include SAP related costs and operating expenses incurred by the various departments that support payroll accounting and processing. Service company cost centers accumulate costs for payroll expenses and capital costs related to the SAP systems. Departmental costs associated with payroll (such as salaries) get recorded as direct charges then allocated or directly charged to the utilities. When directly charging payroll costs, the service company uses Activity Type Prices (ATPs), which consist of standard, fully allocated rates. These standard rates include labor, benefits, IT, human resources, phones, vehicles, facilities and other overhead costs. The service company charges other payroll associated costs to affiliates by using the allocation factors.

SAP's payroll costs are not separately tracked for accounting purposes since management pays one license fee for SAP which includes the costs of the payroll module. The SAP fee was derived from dividing *Total Estimated SAP Costs* by *Total Estimated Number of SAP Users* (which include payroll costs). The SAP user fee includes the estimated cost of IT application support plus hardware, software and associated labor and contractor costs that support SAP. The payroll accounting service was allocated by the payroll employee rate (Employees Paid Ratio) which was derived from dividing the number of employees paid through the service company's payroll system for the client divided by the total number of employees paid through the service company's payroll system for all Client Company's payroll system. The portion of costs associated with payroll accounting services provided for employees of PHISCo were allocated based on the Service Company Bill Ratio. The payroll accounting services costs were billed to ACE in the billing service category Financial Services and Corporate Expenses from PHISCO's monthly invoice. We reviewed cost center reports illustrating how payroll costs are accounted for and charged to the affiliates. The cost center reports covered payroll's PHISCo cost centers and the amounts charged to ACE.

f. Month End Closing

The accounting month-end close process entails use of accounting and other personnel and systems to capture and process financial and operations data for month-end reporting of internal and external financial and operational information. The close process employs many of the systems, modules and processes discussed in this section. Pre integration, the close process took approximately eight business days to complete. Post integration, the process shortened to approximately six business days. The month end closing process is similar, with changes to conform with the Exelon closing calendar and systems.

Prior to the closing of the books, corporate accounting publishes a close schedule for the month ending. During the pre-close period, PowerPlan processes asset retirements and WMIS updates estimates in PowerPlan. During the first and second day of the close process, the system-generated AP, PR accruals, manual accruals and prior month transactions are closed and posted to the general ledger accounts. The intercompany accounting group reviews and analyzes charges to shared services cost centers during this period and adjustments are proposed if required. The service company applies overheads to each legal entity e.g., for storeroom materials and benefits. On the third and fourth day, the service company allocation transactions and deferral accounting, i.e., cost recovery mechanisms, are processed and recorded to the general ledger. The service company costs get allocated to affiliates each month, leaving the service company with zero costs on its books (service company income taxes may be allocated on a one month lag). By the end of the third day, the service company closes its books, and allocates its costs to the affiliates using the Project Costing/CO module.

Between the fourth and fifth day, all manual and system journal entries get recorded and posted to the trial balance. At this time, the service company reviews the allocation factors to ensure accuracy and completeness during the allocation process. The CO module and FI module are analyzed and reconciled to confirm they are in balance. The pre-tax closing of the utilities then occurs and the trial balances are completed and finalized.

From the sixth day through the end of the eighth day of the close process, management updates the trial balance for any changes, corrections, and adjustments. At that point, the preliminary taxes are calculated and completed, elimination journal entries are recorded and posted automatically within the system, and consolidation of the legal entities is completed. Before the close is finalized, the income statement and balance sheet undergo review by performing account variance analyses to determine material fluctuations from current and prior periods. Any necessary adjustments are made to the general ledger accounts as required. There is a final reconciliation of the FI and CO modules to ensure they are still in balance, and then the PHI consolidation is complete. Through each of the closing processes discussed and other sub processes, there are associated Key Financial Controls (KFCs) to be followed. See Chapter IX, *Executive Management and Governance* (Section H) for a detail discussion of KFCs.

4. Tax Allocation Process

The Exelon Corporation and Subsidiaries Amended and Restated Tax Sharing Agreement, dated September 1, 2010, details the procedures for the federal and state income tax liabilities and benefits to be allocated among the member companies, including ACE. Although ACE and other Pepco Holdings LLC members are not signatory parties to the Tax Sharing Agreement, they are subject to the agreement effective March 24, 2016. The tax sharing agreement is a legal contract among members of a federal consolidated group defining their intercompany obligations for federal and state income taxes. Prior to the merger with Exelon, ACE was included in the consolidated federal tax return for Pepco Holdings. Payments were allocated among affiliates in accordance with Pepco Holdings' Tax Sharing Agreement.

The parent company files a consolidated federal income tax return, and allocates the federal income tax liabilities and benefits among the members of the group, based on the guidelines in the

Amended and Restated Tax Sharing Agreement (Tax Sharing Agreement). There are 13 sections to the restated agreement for federal and state tax sharing which provides for consolidated tax elections, liability for consolidated federal income taxes, allocation of consolidated federal income tax liability, negative separate return tax allocations, estimated tax payments, re-computations, responsibility for tax calculations and disputes, state taxes, etc.

The consolidated federal and state income tax return items are allocated to each subsidiary in accordance with the principles of Exelon's Tax Sharing Agreement. ACE is included in the consolidated federal tax return as a member of the affiliated group for Exelon, per the consolidated tax return rules. Each subsidiary designates Exelon, the parent company, as its agent for the purpose and requirements in filing the consolidated federal tax return. The consolidation process considers such items as net operating losses (NOL) (carrybacks and carryforwards), charitable contributions limitations, etc.

a. Federal and State Tax Allocation Methods

Federal Taxes

The consolidated federal income tax liability and benefit (other than the alternative minimum tax) is allocated among member companies in accordance with the separate return tax method. Exelon elected the Separate Return Method where the group's tax liability is allocated based on the ratio of each member's separate tax return liability. Exelon and its subsidiaries file a consolidated federal tax return. The tax apportioned among the member companies with a zero or negative separate tax return is allocated an amount equal to 1) the ratio that each member company's aggregate sum of the positive separate tax return for entities with positive taxes, then 2) multiplied by the ratio of the negative separate tax return of the subsidiary is to the aggregate separate tax return of all subsidiaries with negative taxes. If the consolidated taxable income is positive, each subsidiary with a negative separate tax return is allocated an amount equal to its negative tax. However, if there are uncompensated benefits for the taxable year, such as NOL carrybacks, the subsidiary could carry back to the prior consolidated return year in which it had positive corporate taxable income, referred to as the "carryback year". The corporate taxable income is recalculated reflecting the NOL's in the subsidiaries account. For each subsidiary with a positive separate tax return, the subsidiary is allocated an amount equal to its separate tax return.

The new Tax Sharing Agreement includes an allocation cap for adjusting NOL's carrybacks and a reallocation of the capped amounts. If NOL's or tax credits that a subsidiary has not been compensated under the old Tax Sharing Agreement (dated January 1, 2004), the NOL's or tax credits are used to reduce the separate tax return of the subsidiary in the first year the new Tax Sharing agreement is effective. If a parent has a tax benefit, the benefit is allocated to the subsidiaries with positive separate tax return liabilities and offset to the parent. The allocation to the subsidiaries is based on the ratio of the amount of the subsidiaries positive separate tax return liabilities.

The parent company administers tax allocations and payments to the subsidiaries. The subsidiaries with negative allocations are paid for the amount allocated to them by the parent. All subsidiaries with positive allocations pay the parent the amounts allocated to them. The parent pays all the amounts 30 days following the date the consolidated return is filed or the date following the close of the taxable year, whichever is the earlier date. The parent notifies the subsidiary of the parent's final determination of the allocation to the subsidiary on the close of the taxable year. Recomputations of tax allocations can occur when the consolidated return shows a consolidated net operating loss or a credit against federal income for any taxable year, etc. The allocable share of the resulting tax liability for the prior taxable year is recomputed as discussed above. The tax liabilities and payments are also adjusted. In addition, there are no tax benefits from the existence or operation of PHISCo.

State Taxes

New Jersey is a separate-company filing state and each corporation includes only its income or losses on the New Jersey corporate tax return. All separate corporations of a commonly controlled group doing business in New Jersey file their own individual returns. ACE's taxable income and losses are apportioned to New Jersey. Therefore, ACE is not included in a consolidated return for New Jersey state income tax purposes and the New Jersey state income tax obligations are not subject to allocation among affiliates. The NJ state income taxes are calculated on a standalone basis and reflected in monthly and quarterly tax accounting. The Tax Sharing Agreement states that the state and local income taxes (and all other income taxes) are borne by the member that incurs the taxes.

4. *Budgeting Reporting and Cost Management Tools*

a. Budgeting Reporting

The budget tracking, reporting and accompanying analysis process are an integral part of the overall budgeting and tracking process. We reviewed the budget tracking and the analysis process as two distinct areas to ensure cost management, collecting of cost data, and analysis of the data are performed efficiently. The PHI integration, which includes ACE, was in process during the audit period and was not completed as of December 31, 2017.

Exelon provided the budgeting and reporting policy which includes guidelines for the budget and reporting function such as the policy statement and intent, precautions to be taken, and the applicability and implementation of the budget process. The core function of the budget and reporting process is to develop an annual financial plan and a five-year Long Range Plan (LRP). The purpose of the plan is to achieve specific operational and financial goals which is tied to the utility business plans.

Monthly forecasts of capital and operating and maintenance costs and quarterly forecasts of all financials are provided to management. This budget tracking and reporting allows management to be informed of the most current projections and take action if required. If requested and/or needed by management as well as other stakeholders, ad hoc and periodic report updates to the projections are provided. Accounting policy changes are identified and tracked as a result of discussions between the utility, corporate accounting and personnel responsible for the budget process, i.e., capitalization policy changes.

b. Cost Management Tools

Cost collection and reporting of costs is a crucial step in reporting actual data used for budget and forecast comparison. PHI's SAP financial system uses cost objects as cost collectors and provides various ways to collect and manage costs. Examples of cost collectors are:

- Costs Centers – They are the primary cost collectors for expenses, i.e., functional departments such as customer service, legal, accounting etc., and are the basis of management reporting.
- Orders – collects specific lower level costs of responsibility using internal orders, plant maintenance orders and customer service orders.
- Work Breakdown Structure (WBS) elements and projects are used primarily to collect capital and plant costs, i.e. project work orders.

In addition to using cost objects for collecting costs for actual to budget comparisons, they can be used for the distribution of costs to affiliates and to functionalize expenses for regulatory reporting purposes. Specific cost centers such as resource cost center, B cost centers and receiver cost centers further provide for the cost accumulation process for accounting and cost management purposes. See Chapter IV, *Cost Allocation Methods* for a more detailed discussion of these cost accumulators.

Management performs quarterly fluctuation analysis using the Balance Sheet/Income Statement Report generated within SAP and EPS. Significant balance sheet and income statement items are identified by corporate accounting from the prior year. There are two sources of financial data used for the analysis, the SAP report F01 for utilities and the Hyperion reports from corporate consolidation level reporting. The balance sheet and income statement fluctuation analysis is an actual to actual comparison resulting in changes from various current periods to prior periods. The income statement fluctuation analysis uses current period year to date versus prior period year to date actual data. As a result of the analysis, changes are identified and reviewed and explanations are provided. Any issues identified from the analysis are provided to accounting management for review and disposition. The fluctuation analysis results are maintained in corporate accounting as support documentation for any corrections made or to be made based on materiality.

Exelon's cost management function is responsible for managing the O&M and capital costs. Each of the utilities develop their own cost management framework to drive productivity, analyze costs and costs drivers, and comply with regulatory mandates. The budgeting and reporting group partner with utility operations, corporate finance and utilities to actively manage O&M and capital costs. The partnering effort is to ensure the utility is on track to meet O&M and capital targets and explain month-to-date, year-to-date, and full-year variances to those targets. The budgeting and reporting group provides information to the utility operations with the appropriate cost category, department and subaccount views to cause active management of O&M and capital costs.

Hyperion is the budgeting and reporting system used to track and report budget and actual data for cost management purposes. There is a training document and module which provides an overview of the Hyperion Financials Workspace from basic navigation, to setting preferences, and running reports. The Hyperion Workspace is a web-based user interface for viewing and interacting with content created using Oracle's Hyperion Reporting and Analysis tools and financial applications.

Workspace also provides the Hyperion Reporting Tool for financial and interactive reporting, and the Hyperion Smart View which integrates with Excel, Word, and PowerPoint to provide analysis of data in useable reporting formats. The reporting data sources are Essbase Cubes that contain actual and budget data, the Data Warehouse Relational Tables which includes actual data and the ability to query data for reporting purposes, and real-time Financials - the General Ledger Relational Tables which include various financial statements and reports.

5. Special Recovery Mechanisms

We considered accounting for eight special riders existing to support cost recovery:

- **Rider (NGC) – Non-Utility Generation Charge** for recovery of the above-market portion of NUG contract payments: adopted July 8, 2004 under BPU Docket No. ER02080510, it replaced the Net Non-Utility Generation Charge ("NNC"), and the Market Transition Charge ("MTC") established as a result of the New Jersey Electric Discount and Energy Competition Act (EDECA)
- **Rider (BGS) – Basic Generation Service** for recovery of electricity supply costs of customers who have not chosen a competitive provider: adopted on July 15, 1999 under BPU Docket No. EO97070455, the BGS Rider covers Supply/Energy Charges, the BGS Reconciliation Charge, the Generation Capacity Obligation Charge, the Ancillary Service Charge, the CIEP Standby Fee (paid to compensate the BGS-CIEP Supplier for being available to provide BGS-CIEP Supply to the BGS-CIEP Supplier), and the Transmission Enhancement Charge.
- **Rider (BGS) – BGS Reconciliation Charge** to provide, through customer charges or credits, for the reconciliation of difference between the monthly amounts paid to BGS suppliers and the total revenue from customers for BGS for the preceding months; adopted on December 18, 2002 under BPU Docket No. EX0110754
- **Transmission Enhancement Charge** (**TEC**) adopted on January 18, 2008 under BPU Docket No. EO06020119 to provide transmission owners compensation for PJM-requested transmission enhancements
- **Rider RGGI – Regional Greenhouse Gas Initiative Recovery Charge** to recover regional greenhouse gas initiative program costs through two charges:
    - Residential Controllable Smart Thermostat Program (RCSTP) adopted on July 31, 2009 under BPU Docket No. EO08050326 to recover costs of a program that incents customers to install devices that cycle central air-conditioning systems during peak summer demand periods
    - Solar Renewable Energy Certificate (SREC) Program adopted on March 27, 2009 under BPU Docket No. EO08100875 to address solar financing program costs
- **Reliability Must Run Transmission Surcharge (RMR)** adopted on June 22, 2005 under BPU Docket No. ER05040368 to recovers costs incurred to compensate a deactivating generating unit for continued operation to alleviate PJM reliability impacts
- **Rider SEC – Securitization**: adopted on September 20, 2002 under BPU Docket No. EF03020121 to address stranded costs from electric restructuring stranded costs and including a Transition Bond Charge (TBC) to recover stranded and financing costs and Market Transition Charge Tax (MTC-Tax) to recover related income taxes
- **Rider (SBC) – Societal Benefits Charge** to recover a variety of costs:

- New Jersey Clean Energy Program offering financial incentives, programs and services to help customers save energy, money and enhance the environment; adopted on July 31, 2003 under BPU Docket No. ER02080510
- Uncollectible Account charges to recover the cost of ACE's uncollectible accounts; adopted on July 15, 1999 under BPU Docket No. EO97070455
- Universal Service Fund (USF) costs for assistance to low-income customers with electricity and natural gas bill payment; adopted on July 16, 2003 under BPU Docket No. EX00020091
- Lifeline Program costs for an energy assistance program administered by the New Jersey Department of Human Services; adopted on July 16, 2003 under BPU Docket No. EX00020091

Filings with the BPU lead to approved special recovery mechanism rates, which, following BPU order, become reflected in ACE tariffs. We observed no significant changes to the special recovery riders in place since 2015. We did observe an accounting change in the recovery mechanism for BGS-related purchased power costs. During the first quarter of 2016, ACE changed its method of accounting for over or under recovered costs; it began to include unbilled revenues in the determination of those over or under recovered costs. This change was made to align PHI and Exelon practices. This change in the accounting process did not affect the rates for these programs, which are based on billed revenues.

The next table shows revenues recovered under the special recovery mechanisms we reviewed for 2015 through 2017.

Recovery Rider Collections

Annual Revenues Collected				
		Jan. - Dec.	Jan. - Dec.	Jan. - Dec.
Rider/Mechanism		2015	2016	2017
NGC	Non-Utility Genration Charge	$ 123,532,566	$ 130,328,489	$ 106,146,732
SBC	Clean Energy	$ 32,568,825	$ 31,086,663	$ 28,906,596
SBC	Uncollectible	$ 15,092,844	$ 13,617,253	$ 21,449,401
SBC	Universal Service Fund	$ 17,718,581	$ 18,075,266	$ 15,415,690
SBC	Lifeline	$ 6,404,281	$ 6,044,238	$ 6,291,467
RGGI	Residential Controllable Smart Thermostat Program	$ 30,474	$ (16)	$ (4)
RGGI	Solar Renewable Energy Certificate	$ 5,360,333	$ 6,770,302	$ 4,447,532
BGS	Basic Generation Service	$ 423,657,399	$ 389,606,093	$ 349,706,257
BGS	Reconciliation Charge	$ 1,869,052	$ (4,985,371)	$ 3,577,280
BGS	Transmission Enhancement Charge	$ 8,536,334	$ 7,933,486	$ 7,853,622
RMR	Reliability Must Run Transmission Surcharge	$ -	$ -	$ 4,014,262
SEC	Transition Bond Charge	$ 58,155,766	$ 54,252,855	$ 35,637,727
SEC	Market Transition Charge Tax	$ 36,121,957	$ 25,606,104	$ 19,728,895

BGS costs comprise the largest component of costs, followed by the Non-Utility Generation Charge. Variation in these costs largely reflect energy market, demand, and production conditions. Similarly, the negative amounts related to the Residential Controllable Smart Thermostat Program reflect the fact that PJM Market Revenues generated exceed program costs, leaving none to be recovered from ACE retail customers.

ACE used deferral accounting to account for, track, and control the recovery of costs covered by the special recovery mechanisms we examined. Management has employed Microsoft Excel-based modeling to collect and track costs and revenues subject to deferral accounting and recorded on ACE’s balance sheet as regulatory assets and regulatory liabilities.

The model that tracks BGS revenues and costs collects revenues from rates billed to customers, and compares them to costs incurred. They charge any overcollections to a regulatory liability account and they charge any undercollections to a regulatory asset account. Development of new BGS rates considers and makes adjustments for regulatory asset or liability balances. Any deferrals get amortized over periods set for each rider. This process is repeated annually.

We selected several riders for testing, to determine the type of costs included for recovery. We also conducted two work sessions with accounting and regulatory affairs personnel, at which we reviewed month-end close processes and a review of how management prepares, documents, and files recovery and rate-establishment data and calculations with the NJBPU. We reviewed sample filings, reconciled key cost and revenue data, examined calculations of over or under recovered costs and the journal entries to record the deferral amounts.

The revenue accounting and regulatory affairs groups work together during the month end close process to ensure that the costs to be recovered for each rider are correct and approved as filed with the BPU. Similar accounting and control processes apply to all of those we examined. A Revenue Accounting group calculates the revenue requirement and revenues subject for inclusion. Billed revenue comes via sales and revenue reports from ACE’s billing system. The reports include sales by customer class, which management uses to prepare the revenue journal entries. Expenses information comes from other departments, but is input to the model by the Revenue Accounting group.

Internal controls applied across the month-end process ensure the costs included are recoverable and accounted for correctly, from the receipt of revenue and expense data to preparing and recording journal entries to the general ledger. The Revenue Accounting group sends the journal entries to the Regulatory Affairs group for their review. This control seeks to ensure deferral calculation correctness before recording the journal entries to the balance sheet. Another internal control example is the monthly control sheet that revenue accounting uses to ensure that revenue and sales are reconciled before entering the data into the deferral model. The revenue accounting group also prepares a reconciliation of the deferral cost center(s) to the deferral calculation. This reconciliation process seeks to identify and validate any flow through items.

Recoverable cost types differ among the various special recovery riders. Cost types identified as not specially recoverable, referred to as “flow through costs” get excluded from the deferral calculations used for special mechanisms, becoming part of costs that may be addressed through base rate recovery. Examples of the flow through costs include intra company allocations such as lease revenue from facilities owned by ACE, expenses related to the joint ownership of Merrill Creek, allocated expenses from the PHISCo) to ACE and amortization costs related to transition funding expenses from ACE Funding Company (a separate deferral mechanism to recover the costs that is not an ACE rider). The isolating and analyzing of these revenues and costs in specific cost centers and accounts ensures the costs are not recovered twice, either through special riders or the rate making process.

Examples of allowed costs for special mechanisms include purchase power expenses, administrative expenses (incremental employee labor charges, auction consultants), funding for the Clean Energy Program, accounts receivable bad debt expenses, expenses to assist and support low income consumers with electric bills (SBC-Lifeline and USF). Other recovered costs include purchases from solar developers (financing costs), transmission expenses, and securitization costs related to stranded costs from restructuring of the electric power industry in New Jersey and federal income and state corporation business taxes related to bondable transition bonds.

Transactions undergo review by regulatory affairs personnel to ensure that only costs allowed for recovery by special mechanisms are included.

6. *Accounting and Reporting of Non-Rate-Regulated Revenues*

Management applies to accounting for non-rate-regulated revenues the same practices, procedures and policies used for other transactions, using specific, general ledger accounts. Management employs procedures both for separately tracking them and for excluding them when identifying revenue requirements used for setting customer rates. These revenues get recorded in the:

- Other Income and Deduction section of the internal financial statements
- Other Income (Non-Utility Operating Revenues) in the annual FERC Form 1 filing.

PHISCO's regulatory affairs group prepares base rate cases. Their collection of financial data for filings includes specific efforts to review non-operating utility revenues and associated expenses and to ensure their exclusion from revenue requirement calculations. We reviewed the requirements and expectations from the 2016 base rate case as part of the scope of this audit. We found no specific accounting requirements or explicit expectations set for non-rate-related revenue accounting.

We tested transaction recording by examining a detailed listing of journal entries for the second half of 2017. These journal entries were recorded to non-rate-related revenues and expenses to the general ledger and the 2017 FERC Form 1 Other Income accounts. We found the journal entries initially recorded to internal non-regulated accounts and then mapped to the non-regulated FERC chart of accounts for external reporting purposes. Our review of documentation underlying the journal entries verified account balances in the 2014, 2015, 2016, and 2017 FERC Form 1 reports as summarized in the following table. We verified that computations of gains and losses, and supporting journal entries conformed to FERC Form 1 filings.

Non Rate-Related Revenues and Expenses

Non Rate-Related Revenues	2014	2015	2016	2017
Merchandising, Jobbing & Contract Work	$ 1,546,190	$ 1,428,663	$ 383,864	$ 998,760
Non-utility Operations	125,967	123,564	32,599	26,532
Interest Income	1,076,897	708,488	571,325	208,411
Nonoperating Income	811,315	1,747,862	1,895,536	1,205,218
Gain on Disposition of Property	-	-	1,238,655	55,165
Total	$ 3,560,369	$ 4,008,577	$ 4,121,978	$ 2,494,086
Non Rate-Related Expenses				
Merchandising, Jobbing & Contract Work	$ (2,863,462)	$ (2,787,010)	$ (3,605,872)	$ (2,234,290)
Non-utility Operations	(299,478)	(438,203)	(759,847)	(190,459)
Loss on Disposition of Property	-	(20,798)	(122,868)	(2,083)
Total	$ (3,162,940)	$ (3,246,011)	$ (4,488,586)	$ (2,426,833)

The gains/losses on property sales consisted of the following items:

- 2016 - - $0.3 million gain on the sale of land at the retired Hammonton substation site
- 2016 - - $0.9 million gain on the sale of an administration facility to Walmart
- 2017 - - $55,000 gain on the sale of 14.25 acres of LDVT property (jointly owned, with a 13.9 percent ACE share 90%)
- 2017 - - $2,000 loss on an asset retirement obligation.

We did not receive from management the supporting detail for 2015 and 2016 losses on disposition of property of some $21,000 and $123,000, respectively. We also found record of an auction sale of vehicles. Management incorrectly recorded sale proceeds of about $12,000 Miscellaneous Non-Operating Income, rather than, as they should have been, to the Gain on Asset Sale account. Management agreed that this classification was in error, but we noted that the amount was in fact charged to a non-operating account, thus excluding it from inadvertent use in any rate making proceedings.

D. Conclusions

1. ACE has experienced a significant reduction in accounting-related costs following consolidation of controller functions.

Costs to ACE have fallen by about 20 percent between 2016 actual and 2018 budgeted costs, following substantial consolidation of systems and personnel at the Exelon level.

2. The SAP and Exelon (EPS) system flow chart provides a clear guide to the flow of data and adequately documents the interfaces and systems used to process and report financial data.

The SAP ERP system has been integrated within Exelon's Hyperion Financial Management system. The SAP accounting systems and modules, such as PowerPlan (which includes Fixed Asset modules and PowerTax), CRM&B (SolutionOne billing system), WMIS, Project Billing and Invoicing from WMIS continue to function as standalone modules, interfacing with Exelon's

Hyperion system. These systems continue to process transactions as they did pre- integration. The SAP ERP, legacy PHI general ledger system, with the exception of project billing and invoicing from the WMIS, has been moved to Exelon Performance Systems. The accounts payable has been moved to the Exelon Asset Suite 8 system, Exelon's accounts payable module. Effective January 1, 2018, the SAP payroll module has been integrated within Exelon's ePeople HR Systems Resources Payroll & Time Tracking system\.

The PHI Information Technology group developed the SAP and Exelon system flow charts with input from the internal controls group. SAP served as PHI's Enterprise Resource Planning (ERP) System through December 31, 2017. The SAP chart depicts the various financial platforms, databases and modules that process and store data for accounting, analysis and reporting purposes. It also shows the flow of data from one module, system, or database to another. SAP has modules that can interface with other accounting systems. Some of the modules included in SAP ERP include the general ledger (Financial Accounting (FI), Controlling (CO) - Cost Accounting, FERC Accounting, Project Maintenance, Payroll, Accounts Payable.), inventory, accounts receivable, purchasing, personnel etc. Other major systems are PowerPlan which include the PowerTax and Fixed Asset modules processed in PowerPlan. The SAP CRM&B includes the front end web-based system where other modules within CRM&B house customer data and process metering, bills and customer invoices. The Work Management Information System provides job work flow process for construction and maintenance work from work initiation, through engineering, scheduling, construction and recording the activities through the accounting close process. Exelon's 2018 ACE SOX System Interface was effective January 1, 2018 with certain of PHI's standalone modules continuing to function post integration as they did pre-integration. The flowcharts provide adequate documentation for the roadmap of data flow from module to module based on the interfaces within the various financial systems pre- and post-integration.

3. We found the accounting systems comparable, adequate and well-structured to provide for transaction processing both pre- and post-integration, and were subjected to effective and adequate key internal controls from end to end.

There are two main financial accounting modules within SAP, FI and CO and are stand-alone modules. The FI module is used for external reporting and the CO module for internal reporting. The FI module is by legal entity (for SEC purposes) and the CO module is by LOB. The FI provides the general ledger and supports external reporting requirements, such as SEC filings for the 10Q and 10K reports. The transition from PHI's legacy SAP-based ERP to the Exelon Work/Webfilings module has maintained similar and effective means for ensuring compliance and regulatory reporting and filings.

The CO module collects capital and detail cost accounting data for internal management control and reporting. The CO module serves as the cost accounting module of the SAP system. It allows management to monitor actual revenues and costs (capital and expense) against planned amounts at a business-unit process level of detail. It also provides for variance analysis to support management oversight. There is an internal control process, the FI/CO reconciliation that verifies net income by legal entity (FI module) and LOB (CO module) are in balance. Generally, transactions recorded in the CO module are simultaneously recorded in the FI module. The purpose of this control is to ensure that all numbers have been reconciled between the two modules.

Exelon's Oracle-based general ledger system sets up appropriate means, similar to the legacy SAP system, for keeping the accounting of transaction data structurally separate. The EPS Chart of Accounts (COA) employs an appropriate structure, including natural accounts (general ledger), organizational accounts and cost centers (departments), again, similar to SAP's. The COA captures required items. COA balance sheet structure appropriately addresses plant-related costs. such as PIS and CWIP. Exelon has sufficiently documented its procedures for affiliate transaction accounting in an Associate Transaction Procedures Manual.

4. Construction Work In Progress and Plant in Service processes are appropriate and adequate.

The PHI/SAP systems for PowerPlan which includes CWIP, and that were in place prior to the Exelon integration, continue to be used as standalone modules post integration. The CWIP process records, tracks, and monitors capital expenditure projects. Management also uses the Project System module in SAP to maintain and accumulate charges for capital projects as part of its work order system. The CWIP process entails the coordinated efforts of business units operations and engineering, accounting, and capital planning personnel. Capital plans identify capital expenditures for plant construction. The work flow process for CWIP begins with a work request for a construction project from the WMIS group. Work orders get set up in the CWIP general ledger to capture costs and activity related to the work order, categorized by elements including labor, material, AFUDC, and capitalized overheads to be applied. Management has included changes for the alignment of certain PHI capitalization policies post-merger (change from PHI to Exelon capitalization policies). The changes relate to asset transfers and relocations, temporary services and the timing of capitalized labor costs for new meter installations. We find that PHI and Exelon are working in tandem to use best practices from both companies as evidenced by the alignment of capitalization policies.

5. The accounts receivable process is adequate and appropriate.

The PHI/SAP CRM&B in place prior to the Exelon integration continues to be used as a standalone module post integration. Management enhanced its accounts receivable process by implementing its SolutionOne billing system which is discussed in more detail in Chapter XV, *Customer Service*. SolutionOne is PHI's customer billing platform associated with SAP's CRM&B.

The customer accounts receivable process accounts for billed revenues, and records customer accounts receivable and revenues on the books of the operating utilities. Personnel from Revenue Accounting, Credit & Collections, Special Billing, and Corporate Accounting participate in the billing and recording of the accounts receivables and revenues to the general ledger. Separate accounts receivable systems exist for internal (affiliates billings) and external (customer billings) systems. Intercompany transactions involving receivables and payables automatically get posted to each company's general ledger.

6. The PHI/SAP and Exelon's Asset Suite 8 – accounts payable systems, processes, and controls are adequate and effective.

The PHI/SAP and Exelon's Asset Suite 8 – accounts payable processes are adequately documented with formal policies and procedures to guide the employee to accurately process invoices. The

PHI/SAP accounts payable process is used for the payment of invoices and for the purchase of goods and services from vendors. We examined the AP process documentation, supporting flow charts and internal controls for critical decisions or process steps within the accounts payable process and system. The flow charts include the process steps from the initial receipt of invoices, and proceeding through invoice processing, payment of invoices, and recording of transactions to the general ledger.

There are numerous key internal controls throughout the AP process. These controls include preventive and detective controls. Accounts payable preventive controls include such items as the Corporate Approval Policy and accounts payable invoice process for approval and posting of vendor invoices. The PHI Corporate Approval Policy provides guidelines for management accountability, granting approval authority, assignment of approval levels, commitments and expenditures, and allowable dollar limits. In addition, there have been several internal audits performed on some of the AP processes with resolution of the audit findings, providing improvements to the process. The PHI/SAP and Exelon's time and payroll processes and controls, similar in how they process payroll, are adequate and effective.

The payroll process utilized by Exelon includes the similar processes that PHI used under SAP. It is comprehensive and appropriately controlled. Internal controls in the AP system ensure independence and integrity of processing and paying invoices. Internal controls exist to detect any weakness in the processing function and are adequate. The reporting structure of the payroll processing department supports internal control through segregation of duties. No person has more than one area of responsibility.

7. The accounting for payroll costs is adequate.

The accounting for payroll costs is part of the accounting month end close process. This process includes internal controls to ensure the payroll costs are accounted for appropriately and correctly.

The payroll accounting associates and supervisors prepare and review all payroll reports for accuracy, once the time is entered, verified and processed. One set of reports compares the hours paid and recorded in the general ledger with headcount reports provided by human resources. These reports provide a basis for trend analysis to identify variances. If variances are noted, the LOB personnel must provide explanations. Once explanations of variances are approved and no other variances are found, the report is approved by the payroll supervisor and filed. After all internal controls such as approvals, verifications, evaluations and comparison of payroll data by the payroll accounting and LOB personnel are completed and error free, payroll is processed for payment.

We reviewed the payroll flow documentation for the payroll processing function, controls and how it accounts for the payroll costs and found it to be adequate and effective.

8. The allocation of the payroll costs is appropriate and effective.

The accounting for payroll costs includes the recording of capital costs. These costs include SAP related costs and operating expenses incurred by the various departments that support payroll accounting and processing. Appropriate cost centers accumulate costs for payroll expenses and capital costs related to the SAP systems. Departmental costs associated with payroll (such as salaries) get recorded as direct charges and then allocated or directly charged to the utilities. When directly charging payroll costs, the service company uses Activity Type Prices (ATPs), which consist of standard, fully allocated rates. Exelon uses a fully loaded labor rate and does not use ATP's when charging payroll costs. These standard rates include labor, benefits, IT, human resources, phones, vehicles, facilities and other overhead costs.

9. The Exelon month-end close process is appropriate and effective, as is the legacy PHI process that continues to be used post-integration.

The month end close process entails proper and effective use of accounting and other personnel and systems to capture operations and financial data for month end reporting of financial statements and operational reports. Key meetings, reports, and consultation with stakeholders take place to ensure that transactions are accurate and recorded within the reporting period, to the proper business unit, general ledger accounts, and cost centers. Management has strong, documented month end closing process.

10. The federal and state tax allocation and tax payment processes are adequate and appropriate.

We reviewed the tax allocation and payment processes as described in the Tax Sharing Agreement. The tax sharing agreement is a legal contract among members of a federal consolidated group defining their intercompany obligations for Federal and state income taxes. The Exelon Corporation and Subsidiaries Amended and Restated Tax Sharing Agreement, dated September 1, 2010, details the procedures for the federal and state income tax liabilities and benefits to be allocated among the member companies, including ACE. Although ACE and other Pepco Holdings LLC members are not signatory parties to the Tax Sharing Agreement, they are subject to the agreement effective March 24, 2016. Prior to the merger with Exelon, ACE was included in the consolidated Federal tax return for Pepco Holdings. Payments were allocated among affiliates in accordance with Pepco Holdings' Tax Sharing Agreement.

The parent company files a consolidated federal income tax return, and allocates the federal income tax liabilities and benefits among the members of the group as provided in the tax sharing agreement. The New Jersey state income taxes are calculated on a standalone basis. ACE's taxable income and losses are apportioned to New Jersey. Therefore, ACE is not included in a consolidated return for New Jersey state income tax purposes and the New Jersey state income tax obligations are not subject to allocation among affiliates. We reviewed the Federal and State tax allocation and payment processes as described in its Tax Sharing Agreement, and found them to be adequate and appropriate.

11. The budget reporting and cost management tools are adequate and appropriate.

We reviewed both the PHI/SAP and Exelon's budget reporting and tracking processes, finding both comparable and adequate pre-and post-integration. The budget tracking and reporting allows management to remain informed of the most current projections and take action if required. If requested and or needed by management and others, ad hoc and periodic report updates to the projections are provided. Accounting policy changes, *i.e.*, capitalization policy changes, are identified and tracked as a result of discussions between the utility, corporate accounting and personnel responsible for the budget process.

PHI's SAP financial system uses cost objects as cost collectors and provides various ways to collect and manage costs for management to use in its decision making process. There are periodic fluctuation analyses of actual to budget as well as actual to actual data comparisons. Each of the utilities develop their own cost management framework to drive productivity, analyze costs and costs drivers, and comply with regulatory mandates. The budgeting and reporting group partner with utility operations, corporate finance and utilities to actively manage O&M and capital costs. We reviewed the budget tracking and the analysis process as two distinct areas to ensure cost management, collecting of cost data, and analysis of the data are performed efficiently. We found that the budget tracking and cost management tools are adequate and effective for decision making purposes.

12. We found appropriate the accounting resources, procedures, mechanisms, and controls associated with special rate-recovery mechanisms.

We reviewed eight special recovery mechanisms employed by ACE. The applicable accounting and regulatory process and procedures are documented and appropriate internal controls exist and are applied. Close work between revenue accounting and regulatory affairs personnel serve to validate the propriety of cost items included for recovery. A sound deferral model exists for use in ensuring reconciliation of actual revenues and costs to forecasted or estimated ones use to establish rates subject to such reconciliation. Our work steps included sample testing and work sessions focusing on required revenue and cost entries, reports, calculations, and filings. Those steps identified no concerns with respect to the methods and controls employed to ensure accurate execution of the recovery mechanisms examined.

13. We found accounting process and reporting of the non-rate-related revenues generally adequate and effective, but greater attention to detail is in order. (*See Recommendation #1)*

Accounting practices and procedures conformed to Generally Accepted Accounting Principles (GAAP), and FERC regulatory reporting. Management collects and records non-rate-regulated revenues in specific general ledger accounts and undertakes efforts appropriate in excluding them from revenue requirements calculations. The lack of requested support for two losses and the incorrect recording of sale proceeds, however, point to the need for management to ensure better execution of procedures in this area. The amounts were not, however, material.

E. Recommendations

1. Review the execution of non-rate-related revenue accounting procedures to ensure the availability of supporting documentation and correct classification. *(See Conclusion #13)*

We did not receive requested supporting documentation for two entries and a third should have been classified differently. The amounts involved are not material, but good practice calls for examination of the causes and corrective action as appropriate.

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Chapter XV: Customer Service

A. Chapter Summary

We performed a broad review of Customer Service, addressing:

- Billing and Customer Care Systems
- Credit and Collections
- Customer Complaints and Resolution
- Call Center and Retail Office Operations
- Meter Reading and Field Services
- Revenue Protection.

Overall, Customer Operations performance has improved since the deployment of the new customer system in 2015. We found it an effective element of the business. Residential and business customers rated satisfaction with Atlantic City Electric (ACE) above average in both the 2018 J.D. Power and Associates Utility Residential and Business Customer Satisfaction Studies for the East Mid-Size Segment.

Customer regulatory complaints have been trending upward for the past five years. ACE has implemented a number of initiatives designed to reduce complaints, but has not met the BPU's directive of less than 1,500 complaints per year.

The Call Center uses a work management system to forecast call center loads, and to identify required staffing needs to meet them. Our examination demonstrated sufficient staffing to meet appropriate objectives and performance goals. Recent actions to improve call center performance include alignment of technology platforms and systems with other Exelon operating companies, collaborative forecasting and resource scheduling, and deployment of a gamification reward and incentive system to foster skill development and proficiency.

The Customer Service organization has undergone significant change over the last five years. From 2013 to 2016 the organization transitioned from its legacy CIS to the SAP Customer Relationship Management and Billing System (CRM&B). During this time the organization remained heavily involved in pre-deployment activities, deployment, and post-deployment stabilization. After deployment, the organization focused on training and system proficiency and process optimization. Following the Exelon merger, 2016 and 2017 activities focused on aligning practices, processes, performance and technology standardization and updates. Going forward, Customer Service Operations management has shifted focus to the customer experience, with a plan to introduce measurement, identify improvement opportunities, and initiate changes. ACE will also pursue moving payment calls to the payment processing vendor to reduce risks associated with employee fraud and data security issues. Additionally, all Exelon Operating Companies will align call quality measurement approaches, and emphasize the customer experience.

We formed the following specific conclusions with respect to Customer Service:

1. ACE regulatory complaints have been increasing since 2013, at levels well above the Board's directive (*Recommendation #1*).
2. ACE's Call Centers are successfully staffing to meet service level objectives and performance goals.
3. ACE call center quality consistently exceeded quality goals during 2017.
4. ACE's meter reading performance has improved since 2014.
5. Billing performance has improved significantly since 2015 and is approaching pre-SAP CRM&B levels.
6. Self-service utilization increased since 2015.
7. Paperless bill adoption is lagging industry. (*Recommendation #2*)
8. ACE's collections performance has improved since 2015.

We offer the following specific Customer Service recommendations

1. Continue complaint root cause efforts to reduce complaints and to improve the customer experience of customers who are challenged to pay their accounts. (*Conclusion #1*)
2. Promote paperless billing to increase participation and reduce billing costs. (*Conclusion #7*).

B. Background

ACE provides customer service through phone, field, and face-to-face services to approximately 550,000 customers in 2,700 square miles of southern New Jersey. ACE's customers account for more than 1.7 million customer calls annually and 6.3 million customer bills.

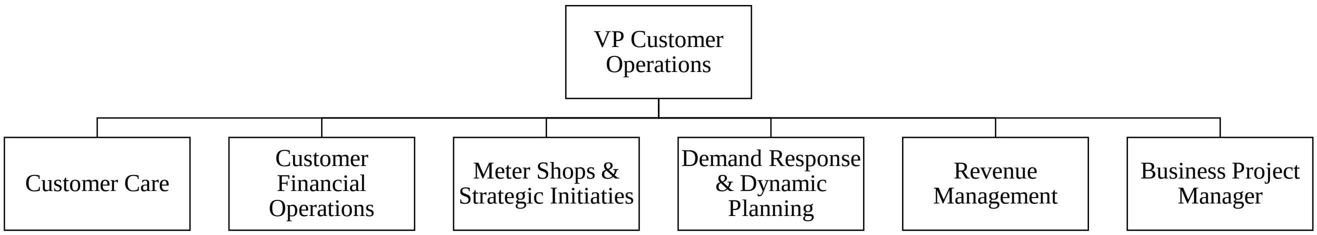
Liberty examined meter reading, customer-related accounting functions, customer information systems, billing and collections, call center functions, marketing functions, service installations, and disconnect and reconnect practices. Liberty also reviewed Operations and Maintenance expenditures, Capital Budgeting and Spending, and Strategic Planning as they concern customer service related functions. The overall structure of our review incorporated the following subject areas:

- Billing and Customer Care System
- Credit and Collections
- Customer Satisfaction Measurement
- Customer Complaints and Resolution
- Marketing and Key Accounts
- Call Center & Retail Office Operations
- Meter Reading
- Field Services
- Revenue Protection.

C. Findings

1. Customer Organization and Staffing

Customer Operations, operating at the PHISCo level, comprises the organization responsible for delivering customer service to ACE's customers. The Vice President of Customer Operations heads the organization, and reports to the PHI-level Chief Operating Officer and Senior Vice President. The following chart shows ACE's Customer Service organization. This group has responsibility for managing billing services, interfacing with residential, commercial, and industrial customers, and supporting new service connections.



The Customer Operations organization manages a number of specifically-focused customer programs:

- Comfort Partners Home Weatherization for Low Income Customers
- Home Energy Reports (focused on low income and high usage customers)
- Energy Wise Rewards Direct Load Control Program
- Quick Home Energy Check Up
- Helping Hands Program
- Atlantic City Call Center Pilot Program.

Another organization, headed by PHISCo's Senior Vice President of Government and External Affairs, manages two other customer-service functions - - Customer Advocate and Large Customer Services.

The next table summarizes ACE Customer Service year-end staffing levels:

ACE Customer Service Staffing

Function	2013	2014	2015	2016	2017
Call Center	109	120	111	114	113
Call Center (Outsourced)	26	65	33	31	21
Billing	28	39	46	35	30
Billing (Contractors)	3	3	12	13	4
Credit/Collection (Inside)	15	17	17	20	19
Payment Processing (w/Cashiers)	16	15	16	16	16
Field Collections/Meter Operations	35	32	39	47	46
Meter Reading (Contractor)	73	75	75	76	77
Revenue Protection	3	3	3	3	3
Meter Data Analysis Services	40	14	20	17	17
Demand Response & Dynamic Pricing	10	11	13	13	8
Commercial Account Mgt	8	8	7	1	0
Other	1	3	3	4	4
Total Staffing	367	405	395	390	358
Customers	545,277	545,277	547,145	549,621	551,000
Staffing per 100K Customers	**67**	**74**	**72**	**71**	**65**

ACE Customer Service staffing Call Centers and Billing levels peaked during 2014, while supporting CRM&B implementation. Temporary employees and contractors formed a significant portion of these personnel. ACE's customer service staffing levels per 100,000 customers have since returned to pre-CRM&B levels.

ACE operates two call centers, one in Carney's Point New Jersey and the other in Salisbury, Maryland. They include approximately 113 Customer Service Representatives (CSRs). ACE also shares 27 agents-at-home with Delmarva. Two outsourced providers (Convergent and Conduent) answer a portion of inbound customer calls. Since 2007, ACE has contracted with Convergent (formerly known as ER Solutions), whose third-party call centers (in Atlanta, Georgia and San Antonio, Texas) provide 20 to 30 additional off-site CSRs to supplement day-to-day operations. Conduent is also located in San Antonio, Texas. Both Convergent and Conduent provide Crisis Call Center services when needed to support customer communications during large outages and storms. Management also has the ability to supplement outage call handling through participation in a multi-utility mutual assistance support program (MARS).

Customers may pay in person at one of five walk-in locations in Atlantic City, Egg Harbor Township, Millville, Turnersville, and Cape May. ACE walk-in locations received 167,000 payments accounting for $35 million in revenue in 2017.

ACE's Meter Services organization reports to Service Centers in Carney's Point and Mays Landing, New Jersey. An affiliate, Millennium Account Services LLC (MAS), has performed meter reading for ACE since 1995. PHI and South Jersey Industries jointly own this entity.

2. Information Systems

The primary systems supporting ACE's customer service functions include:

- The SAP CRM&B Customer Information System
- Preference Center
- iFactor Mobile App
- MV90
- ABB Advantex Mobile Dispatch System
- Load Profile and Settlement System
- Itron Enterprise Edition Meter Data Management System
- Lodestar Billing Expert (Large Customer Billing)
- NICE Speech Analytics
- Network Management Systems Outage Management System.

Exelon has initiated a multi-year technology plan, North Star, to migrate all operating companies to the same technology platforms and systems. This plan anticipates that ACE will standardize its customer service related applications in the next five to seven years. PHISCo upgraded its public website and Integrated Voice Response (IVR) technology in 2018, as part of this overall North Star plan. The Exelon merger commitments preclude ACE rate recovery of costs incurred to migrate from PHI's SolutionOne SAP system prior to the conclusion of the life of assets replaced. The new SolutionOne SAP billing system platform will be in use for its expected useful life.

3. Performance Measurement

Customer Operations measures and reports performance and reviews metrics on a monthly basis with senior leadership. Tier 1 and 2 metrics are routinely tracked for comparison between Exelon's operating companies. Customer Operations metrics include:

- *Customer Satisfaction Index % Positive*
- *Customer Satisfaction Index Mean*
- *Call Center Satisfaction*
- *Uncollectible Expense % of Revenue*
- *Percent of A/R > 60 Days*
- *Past Due Days Sales Outstanding*
- *Service Level (% within 30 seconds)*
- *Agent Service Level*
- *Abandon Rate*
- *Average Speed of Answer*
- *Calls per Customer*
- *Agent Calls per Customer*
- *Busy Out Rate*
- *Response Time Agreement (OTD)*
- *Customer Channel Utilization*
- *Percent of Meters Read*
- *Customer Field Operations YTD Completed Work*
- *Meter Corrective Maintenance Backlog Workdown*
- *All in Customer Operations Backlog*
- *Percent of delayed bills*

Customer Service initiatives over the past few years have focused on improving efficiency and aligning technologies, processes, and practices with Exelon "best practices". Activities and initiatives have included:

- Participation in a monthly collaborative call with internal peers to discuss upcoming activities that may increase call volumes so that the Resource Management group can build these events into the resource plans.

- Creation of an attendance management program to focus on driving improvement in absenteeism and managing Family Medical Leave Act (FMLA).
- Implementation of a new IVR that offers predictive intent, a Spanish menu, and other menu improvements to boost self-service participation.
- First Call Resolution initiative focused on improving issue resolution and the customer experience.

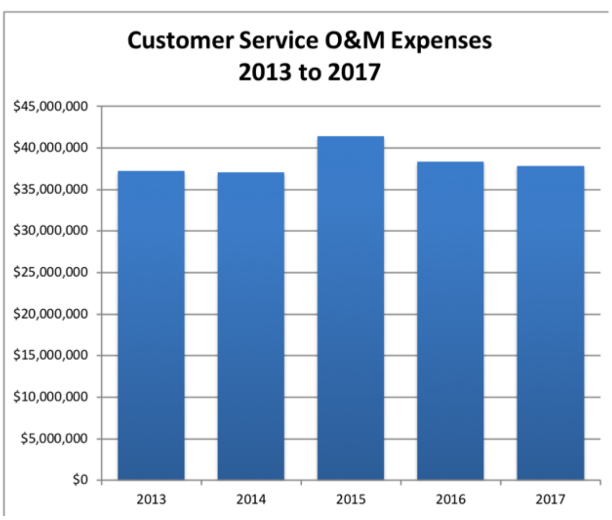
Additionally, ACE conducted a variety of meetings to address Customer Operations performance and practices in the years following the SAP CRM&B implementation, including:

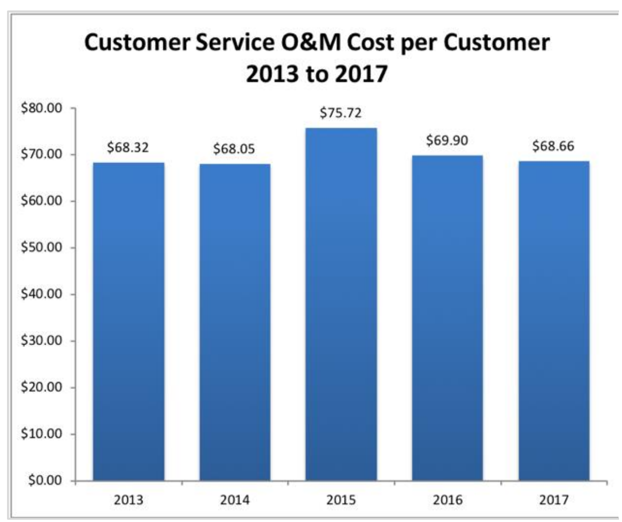
- Customer Operations Leadership Meetings – Weekly cross functional meetings following SAP CRM&B deployment to raise issues, collaborate on resolutions, and foster relationship building between Billing, Credit, and Call Center leadership.
- Peer to Peer Group Meetings – Meetings among various Exelon leadership levels to identify areas of opportunity for improvement and to select best practices for alignment.
- Customer Relations Research & Resolution - Weekly meetings to focus on reducing the number of NJ BPU escalations/referrals and complaints.
- Internal Focus Groups – Meetings to obtain feedback from the front-line to help drive business improvements.

4. *Costs*

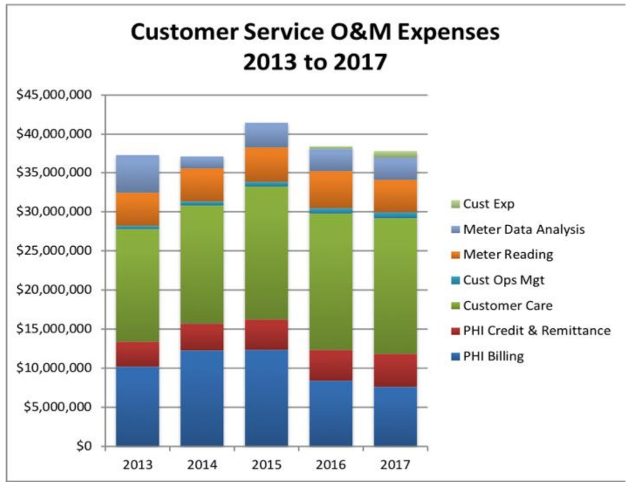
a. Total Customer Service Costs

Customer Service expenses overall have decreased since peaking in 2015, reducing cost per customer by about $5.82 from 2015 to 2016. The following tables show recent cost changes.





Customer Billing related O&M costs peaked in 2015, the year of the customer-information-system implementation. Billing costs increased in 2014 and 2015, then dropped below 2013 levels in 2017. Customer Care (call center) costs increased by 21 percent and Credit and Collection costs increased by 46 percent from 2013 to 2017.



b. Customer Contact Costs

ACE's Customer Contact operation and maintenance (O&M) costs increased from 2013 to 2017. However, call volume increased by 22 percent since 2013, reducing cost per call in 2017. Full Time Equivalent resources (FTEs) include employees and contractors.

Customer Contact Costs

Year	Total Costs	Calls[1]	$/Call	FTEs
2013	$14,356,624	1,525,625	$9.41	135
2014	$15,060,415	1,451,541	$10.38	185
2015	$17,018,589	1,694,379	$10.04	144
2016	$17,379,479	1,755,160	$9.90	145
2017	$17,358,728	1,855,532	$9.36	134

[1] Handled by agents and/or technology

c. Credit and Collection Costs

ACE's Credit & Collection operation and maintenance (O&M) costs and cost per collection action have increased 46 percent since 2013, while field services actions have also increased, slightly reducing the cost per collection action. Net write-offs, expressed as a percentage of revenue, have decreased since 2013. The next chart summarizes credit and collection costs, excluding Uncollectible Costs.

Credit & Collection Costs

Year	Total Cost	Field Actions	Dollars/ Action	Write-off[1]	Inside FTEs
2013	$1,564,395	12,785	$122.36	1.48%	15
2014	$1,856,696	6,778	$273.93	1.33%	17
2015	$1,977,745	7,132	$277.31	0.85%	17
2016	$2,238,507	13,198	$169.61	1.71%	20
2017	$2,276,696	18,711	$121.68	1.36%	19

[1] Net write-off as a percent of total revenue

ACE's Payment Processing operation and maintenance (O&M) costs, and cost per payment, have increased slightly since 2013. The percentage of electronic payments has also increased each year since 2015. The next table summarizes payment processing costs, including ACE cashiers and back-office payment processors.

Payment Processing Costs

Year	Total Costs	Payments	Electronic	Dollars/ Payment	FTEs
2013	$1,668,689	5,605,039	N/A	$0.30	16
2014	$1,638,261	5,498,506	N/A	$0.30	15
2015	$1,861,407	5,091,543	52%	$0.37	16
2016	$1,790,805	4,910,067	58%	$0.36	16
2017	$1,917,217	5,313,021	62%	$0.36	16

d. Billing Costs

The next table summarizes ACE billing operation and maintenance (O&M) costs, which peaked in 2015 and have declined since. The resource column (FTEs) includes employee and contractor personnel.

Bill Processing Costs

Year	Total Costs	Bills	$/Bill	FTEs
2013	$10,191,195	6,064,305	$1.68	31
2014	$12,242,833	5,827,671	$2.10	42
2015	$12,367,942	5,897,292	$2.10	58
2016	$8,359,311	5,994,768	$1.39	48
2017	$7,614,207	5,995,556	$1.26	34

e. Metering Costs

The next table summarizes ACE's Meter Reading operation and maintenance (O&M) costs, and cost per meter read. Meter reader productivity, as measured by meters read per full-time equivalent, has declined since 2013.

Meter Reading Costs

Year	Total Costs	FTEs	Monthly Averages		
			Monthly Reads	Cents/ Read	Reads/ FTE[1]
2013	$4,248,051	73	601,730	59¢	8,243
2014	$4,252,891	74	591,405	60¢	7,992
2015	$4,408,264	74	598,623	61¢	8,090
2016	$4,716,756	77	605,042	65¢	7,858
2017	$4,177,970	79	587,013	59¢	7,431

[1] annually

ACE's Meter Services operation and maintenance (O&M) costs and cost per meter service order have increased 22 percent, since 2013 while service order volumes have increased 25 percent. The next table summarizes these costs.

Meter Services Costs

Year	Total Costs	Service Orders	$/Order	FTEs
2013	$5,569,726	196,488	$28.35	35
2014	$4,572,158	185,218	$24.69	32
2015	$6,645,197	235,674	$28.20	39
2016	$7,065,482	267,894	$26.37	47
2017	$8,434,305	244,748	$34.46	46

f. Revenue Protection

ACE spent [redacted] per theft-of-service case investigated in 2017. The cost per case and recovered dollars per case peaked in 2015 and have been declining since, as the following table shows.

Revenue Protection Costs
(Shaded Material in Table is Confidential)

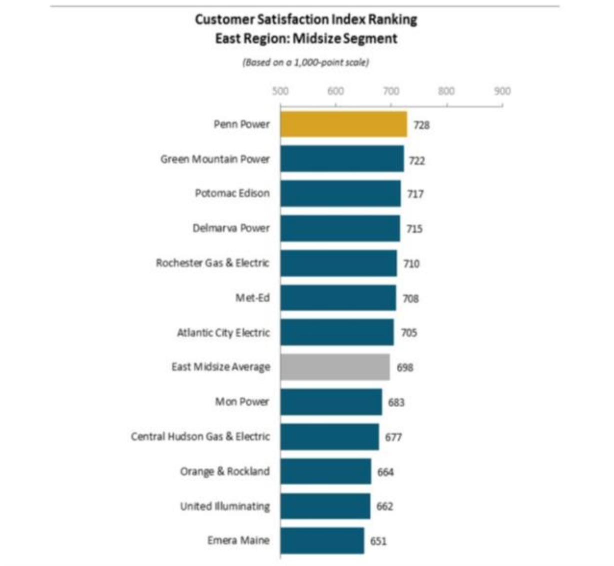
Year	Total Costs	Cases Closed	Dollars per Case	Dollars Recovered per Case	FTEs
2013	$410,004	[redacted]	[redacted]	[redacted]	3
2014	$475,408	[redacted]	[redacted]	[redacted]	3
2015	$459,111	[redacted]	[redacted]	[redacted]	3
2016	$375,856	[redacted]	[redacted]	[redacted]	3
2017	$417,365	[redacted]	[redacted]	[redacted]	3

5. Customer Satisfaction

ACE measures customer satisfaction through several survey mechanisms. The J.D. Power and Associates Customer Satisfaction Index annually compiles customer satisfaction survey results within the utility industry. This index has wide industry acceptance for measuring overall satisfaction. This index provides ACE the ability to benchmark performance on a national and regional basis, but may be limited in terms of understanding the views of customers in a particular jurisdiction. Residential and business customers rated satisfaction with ACE above average in both the 2018 J.D. Power and Associates Utility Residential and Business Customer Satisfaction Studies for the East Mid-Size Segment.

JD Power 2018 Electric Utility Customer Satisfaction Study[SM]

Residential



Commercial

ACE has ranked above average or slightly below average in the surveys for the past three years. The next table shows trends across the past three years.

J.D. Power Customer Satisfaction Results

Year	Residential		Business	
	ACE	*Average*	*ACE*	*Average*
2016	645	653	734	737
2017	688	689	776	747
2018	705	698	748	744

PHISCo also measures ACE customer satisfaction annually and quarterly, using Market Strategies, Inc. (MSI) surveys. These surveys provide customer perceptions of company performance. Management uses survey results to identify strengths and weaknesses in the customer experience. Overall customer satisfaction, as measured by MSI, has improved since 2015.

Customer Satisfaction Score Historical Trends

(Chart is Confidential)

[redacted]

*2017 data cannot be trended due to change in scale endpoint in Q1 2017.

ACE's year-end 2017 MSI customer satisfaction research revealed performance in the [redacted] quartile in 5 of 8 categories (shown below) using a benchmark comparison to MSI's National and MSI Peer performance. ACE ranked in the [redacted] quartile in overall satisfaction and in ease of doing business with. ACE ranked [redacted] quartile in providing reliable service and restoring electric service when outages occur. The next chart shows MSI benchmarking detail.

ACE Customer Satisfaction Benchmarking Details

(Figure is Confidential)

[redacted]

ACE conducts "Moment of Truth" surveys to obtain customer feedback across a range of transactions, including service calls, outage calls, calls handled by the IVR and call center, and walk-ins at the courtesy centers. Management conducts weekly telephone surveys, contacting customers within 10 days of the service interaction. The more than 6,500 interviews conducted in 2017 produced the following summary results:

- Overall satisfaction with payment centers remained high (94 percent satisfaction)
- Contact center satisfaction improved four points from 2016 to 2017
- Satisfaction with the automated phone system (IVR) improved substantially from 2016 to 2017 (14 points)
- Nine in ten customers rate customer service representatives highly for courtesy and respect.
- Satisfaction with problem or inquiry resolution and with field-service appointments dropped in 2017.

Management also conducts a wide range of ad-hoc surveys and focus groups to investigate customer preferences and expectations. Customer telephone surveys address recent transactions or interactions, including: customer service calls, outage calls, IVR handled calls, walk-in transactions, and service appointments.

6. Customer Complaints and Resolution

In October 2011, PHI created the executive-level Customer Advocate position, reporting directly to the Senior Vice President of Government Affairs & External Affairs. The Customer Advocate's group works directly with customers and governmental and regulatory officials to promote better understanding and meeting of customer expectations. A team of customer and community relations managers work exclusively in the communities served by ACE. The team conducts frequent speaking engagements and energy assistance enrollments. The team also provides customers with information on various energy topics (*e.g.*, customer programs, proposed rate adjustments, and emergency preparedness).

The Customer Advocate's team also includes representatives who research and resolve escalated customer complaints. This group logs all incoming complaints or inquiries from the BPU, Better Business Bureau, and Office of Attorney General. Representatives categorize them in a Complaint Tracking System. The team has responsibility for complaint receipt, resolution, customer follow-up, and formal response. During 2017, ACE averaged 1.1 days to respond to BPU complaints. The team accumulates complaint data and reports it to management monthly.

The Customer Advocate team also logs, assesses, and follows up on any written or verbal complaints to senior management, reporting results to senior management. Upon closure of a complaint/inquiry in the Complaint Tracking System, representatives send a follow-up letter, when applicable.

To comply with merger commitments and ACE's Customer Service Improvement Plan (CSIP), a cross-functional complaint root cause analysis team has met monthly since 2016 to review and discuss a sample of recent BPU complaints to identify opportunities for complaint reduction. Examples of initiatives developed include:

- Revised security deposit guidelines to assess a deposit following the 5th notice rather than the 2nd
- Revised the reconnection policy to enable customers who have not had a payment arrangement in the last 12 months to reconnect with a payment of 25 percent of the past balance along with a 12-month installment plan

- Modified NJ Customer Bill of Rights to more prominently include ACE Customer Service information
- Created a specialized team of customer service representatives to handle reconnection calls from customers who have extenuating circumstances
- Provided three resources on-site at PHI vendor call center to provide additional coaching and reinforcement of proper credit call handling
- Expanded community outreach and assigned two community outreach CSRs to staff the busiest Customer Courtesy Centers two days each week to provide energy assistance to customers and help them establish payment arrangements
- Established refresher training around the communication of account balances to customers for reconnection purposes and deferred payment arrangement eligibility requirements
- Established direct phone number and dedicated team to serve as an escalation point for the NJ 211 Call Center and focused on-site training at the NJ 211 Center to address customers wishing to file a complaint with the BPU
- Provided credit policy call handling refresher training to CSRs and scheduled more detailed class room training.

ACE launched the Atlantic City Call Center (ACCC) outbound pilot program in August 2017 to promote various energy assistance programs to ACE customers in arrears. More than 64,000 customers were referred to ACCC during August through December 2017. Ultimately, more than 2,900 customers received energy assistance information or were transferred directly to an agency for assistance. Customers were also informed of upcoming outreach events for in-person assistance. By year-end, 125 customers were enrolled in an energy assistance program.

In the 1st quarter of 2018 ACE promoted energy assistance programs to eligible ACE customers through traditional radio ads, out of home ads, digital ads and direct mail. These campaigns are designed to increase awareness and drive customers to the website to learn more and apply for energy assistance programs.

7. Managing Key Accounts

The PHISCo-level Large Commercial Services group has responsibility for developing and maintaining relationships with key accounts. Key accounts consist of businesses having more than 300 kWh usage per year. ACE has assigned two senior account representatives to support approximately 3,800 accounts. Most senior account representatives have served in their roles for a long time.

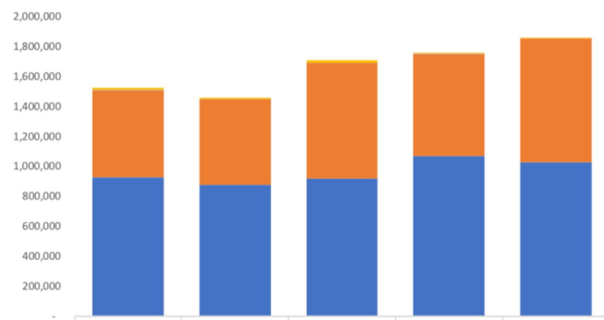
Key Account Managers (KAMs) have responsibility for building relationships with their assigned customers, and for working with them to address reliability and power quality issues. KAMs also focus on helping businesses with energy efficiency initiatives.

PHISCo has also established a key account support team (KAST) using a specialized call center for its large customers. KAST specialists handle questions and issues raised by customers. They also deal with property managers and landlords regarding starting and stopping service for tenants. Customers can reach the KAST from 8 a.m. to 5 p.m., Monday through Friday.

8. Call Centers and Web Access

The two Customer Contact Centers that serve ACE normally take calls Monday through Friday from 7 am to 7 pm. The center handles calls related to new-service connections, service disconnection, billing, credit, collections, and general customer questions. The center accepts emergency calls during the remaining, night and weekend hours. ACE received more than 1.8 million calls in 2017. Incoming call volumes for the past 5 years are depicted below. ACE blocked or abandoned very few calls, as the next chart summarizes.

Customer Call Totals



	2013	2014	2015	2016	2017
Abandoned	13,700	8,709	14,959	5,013	5,035
Blocked	794	138	13	333	0
IVR	582,371	573,950	772,425	684,514	824,121
Agent	929,554	877,591	921,954	1,070,646	1,031,411

All published ACE toll free numbers terminate via AT&T lines to a hosted, high-volume Interactive Voice Response (IVR) on a West Interactive Services platform. This system, deployed in the summer of 2017, allows automated customer self-service and outage reporting. During business hours, calls not completable within the IVR transfer to Customer Service Representatives. After hours these calls receive "we are closed" messaging. The Carney's Point and Salisbury call centers operate on an Avaya PBX (PBX) platform. Automated Call Distribution technology delivers calls from the PBX to the call centers. Exelon plans a system-wide transition to one system (employing an Avaya platform) to facilitate load-balancing among all Exelon call centers.

An automated phone service (IVR) allows ACE customers to access information about their accounts, pay bills, make payment arrangements, sign up for budget billing, enter a meter reading, defer a payment, stop service, or report an outage. IVR enhancement came in 2018, as part of the Northstar Technology initiative. New features include Spanish menus and scripts and "predictive intent" - - a feature designed to anticipate reasons for customer calls based on account characteristics made available from the customer information system. This change requires customers to spend less time entering information needed to identify their account or the reason for the call. ACE's IVR completely handles approximately 45 percent of calls without agent assistance. Customer satisfaction with the IVR has improved while the percentage of calls completed with the IVR has increased.

PHISCo facilities in Salisbury, MD and Washington, D.C. include Overflow and Disaster Recovery trunk lines and redundant systems. In the event of a disaster or catastrophic failure affecting one or both centers, ACE can route calls appropriately to ensure contact center continuity. In addition, ACE has the ability to deploy agents at home, through its current agent-at-home program. Its contractor, Convergent, would continue to take calls as normal. Depending on the expected recovery time, Convergent has the ability to increase staffing and to provide additional support. The outage line would remain at West's IVR Platform. This approach enables callers to report an outage via the automated system. It also provides the ability for customers reporting an emergency (and callers unable to be identified in the automated system) to be redirected as necessary.

ACE's website provides customers with information and programs to help manage bills. The website provides a number of downloadable forms and brochures covering various energy efficiency programs. Customers may also view outage status, report streetlight outages, request energy audits, view account information, pay bills, start or stop service, and enroll in Budget Billing and other payment programs. ACE has also deployed an Outage Reporting and Monitoring website, which facilitates customer communications with ACE during storms or outages. Management enhanced the website in January 2018 to mirror Exelon's utility platforms. Additionally, it stress-tested website infrastructure to ensure that ACE can support customers during large and small outage events. An app enables ACE customers to interact by mobile phone.

9. *Representative Training and Performance Measurement*

Agents in PHI's Carney's Point and Salisbury centers and outsourced agents in Convergent's centers receive training on handling customer service and emergency calls. Customers reporting hazardous conditions, such as a wire down, get a 'high' priority that places their calls ahead of all calls awaiting answer. An overall ACE service-level goal calls for answering 89 percent of calls within 30 seconds (by technology or agents).

ACE records 100 percent of inbound customer calls, using the NICE Interactions Management Recording and Monitoring system. The Quality Team evaluates three to four calls per month for each customer service representative. The process evaluates calls at various times of the month, randomly chosen from weekdays, nights, and weekends. In addition to monitoring quality on a daily basis, the Quality Team has responsibility for evaluating call quality during major storm events, including calls handled by second role/auxiliary support employees and Crisis Call Center representatives. The Quality Team also monitors internet transactions. A third-party, Ulysses Learning, also evaluates one call per CSR each month and provides feedback on CSR soft skills. Once calls are evaluated, CSRs have the ability to view the evaluations and listen to the calls. Supervisors are responsible for reviewing the evaluations with the CSR during coaching sessions. Monthly call calibration sessions offer a means to promote consistency in scoring among supervisors and quality analysts.

ACE focused on improving customer service representative consistency and quality during 2016 and 2017. Proficiency improved through continuous refresher training, monitoring, and coaching by the supervisory team. In addition, ACE implemented Axonify, a learning reinforcement system based on gamification. Representatives are scheduled to participate in Axonify for 5 minutes each day to test their knowledge. The system incorporates rewards and recognition to incent advancement through various levels of difficulty.

A monthly "voice of the customer analysis" uses language verbatim from the monthly transactional survey. The process includes listening to the call, locating the account in the SAP CRM&B system, reviewing the interaction record, and then analyzing the account to determine if the appropriate actions resulted.

10. Payment Services

Customers can make in-person payments by walking in to one of five ACE Business Offices, located in Atlantic City, Cape May, Millville, Egg Harbor Township, and Turnersville. Customers can also pay bills at third-party payment locations throughout the state.

Customers also enroll in "My Account" though a secure self-service web portal that provides options to view bills, energy usage, and payment history. This service also allows customers to sign up for AutoPay, compare energy usage, and learn about options to save energy. Eleven percent of ACE payments come online through ACE's My Account's e-billing service, and 4.1 percent of customers have signed up for Auto Pay (direct debit). Customers can also choose ACE's paperless billing option. As of year-end 2017, nearly 12 percent of customers have opted for paperless billing.

ACE customers can pay in cash, by check, with a credit or debit card, or through a check draft (ACH payment). Mail, phone, Internet, and in-person payment options exist. Customers may pay by credit or debit card over the phone, or can pay through the web, which adds a SpeedPay convenience fee.

ACE began accepting representative-assisted phone payments in May 2012. The representatives take credit and debit card numbers, or ACH bank routing and account numbers, over the phone, and enter them into a browser-based payment, then processing applications under Western Union SpeedPay. ACE previously required customers paying by credit or debit card to do so in a self-service manner, through the IVR or website, using another vendor, BillMatrix. The move to SpeedPay provided a common payment vendor for all three operating companies.

Merchants, payment card processors and retail businesses accepting or processing American Express, Visa, Discover, MasterCard or JCB International brand credit and debit cards must be PCI-DSS (Data Security Standard) compliant. PCI-DSS version 2.0 sets a multifaceted security standard that includes requirements for security management, policies, procedures, network architecture, software design, and other critical protective measures. The PCI Security Standards Council website lists these requirements.

PCI-DSS compliance proves particularly challenging in a call center environment, because representatives manually enter card member data and because networks transmit data for validation and authorization of charges. It violates PCI DSS Requirement 3.2 to store any sensitive authentication data, including card validation codes and values, after authorization, even if encrypted. Call recordings of credit or debit card payment transactions contravene PCI DSS requirements, and potentially expose cardholder data to unnecessary risk.

In 2012 ACE appointed a program coordinator for PCI and NACHA (Electronic Payments Association) payment compliance. The program coordinator manages payment compliance, by following trends, identifying risk and anomalies, and ensuring that PHI's utilities and payment vendors remain up to date with payment compliance standards. Since creating this position, ACE's payment compliance program has developed Payment Compliance Policies, Payment Compliance Training, and Payment Compliance Processing Monitoring Guidelines. ACE also contracted with a consultant, Analytic Results, to conduct a PCI risk assessment. ACE self-assessed as PCI compliant in 2017.

11. Credit and Collection

ACE provides service under a BPU-approved tariff and rate schedules governing important timing details and credit and collections policy and actions. We examined how ACE ensures that employees execute credit and collection practices, and abide fully with public requirements.

Credit and Collections functions fall under the Customer Operations group of the PHISCo Customer Care organization (see the preceding organization chart). The Credit & Collections organization includes inside collections, responsible for active collections, final bills, and limited inactive collections. The Meter Services organization provides meter technicians, who perform payment collection in the field, disconnect for non-payment, and reconnect service.

At year-end 2017, ACE listed about $32.3 million (approximately 35 percent) of its billed revenue as beyond 60 days delinquent. During 2017, ACE established 90,664 new deferred payment arrangements (DPAs). By year-end, 24,062 arrangements remained active, 15,176 completed, and 60,701 defaulted. Between 45,000 and 50,000 customers a year are eligible for field collection action (outside Winter Restrictions months). ACE disconnects approximately one-third of eligible disconnect orders.

The SAP customer information system (CRM&B) provides automated dunning functionality to facilitate collection of delinquent customer payments. This functionality manages the customer notification process, initiates service orders for manual disconnection, transfers customer receivables to collection agencies, and manages the write-off of bad debt. The next chart lays out ACE's collection timeline:

ACE Collection Timeline

Day 1:	Bill printed and mailed
Day 21:	Bill due date
Day 23:	Outbound calls to new customers owing more than $100
Day 31:	Outbound calls to commercial customers
Day 36:	15-day disconnection notice mailed and account becomes field eligible
Day 37:	Deposit assessment
Day 45:	Automated dunning call for commercial accounts; late-payment charge
Day 46:	Automated dunning call for accounts owing more than $200
Day 50:	Automated dunning call for accounts not contacted on Day 46
Day 52:	Create disconnection order for accounts owing more than $200
	Final bill sent (following disconnection)
Day 22:	Send final 10 day notice for final bill
Day 32:	Account sent to third-party collection agency (DebtNext)
Day 141:	Inactive final bill balance written-off

Delinquent accounts become eligible for a field visit on Day 52. Field visits can result in one of three actions: (a) service disconnection, (b) partial or full customer payment with continued service, (c) notice left and service continued if customer not at premises.

ACE selects accounts for discontinuation of service based on the current balance due, length of service, credit history, and field availability. ACE does not terminate residential customers who have a qualified payment plan in place to pay off arrears. Consistent with the Winter Termination Program, ACE may not disconnect residential customers for non-payment from November 15 through March 15, provided they participate in an assistance program, and make a good faith effort to pay.

12. Billing

Accurate and timely customer accounting, like meter reading, comprises a fundamental element of the utility/customer relationship. Timeliness offers an important contributor to minimizing the billing and payment cycle, and to supporting systems of communication with and about customers. Efficiency systems and methods are critical to handling billing-support functions cost-effectively, recognizing the advances that technological improvements have made possible. Accuracy promotes full and proper revenue collections, while minimizing customer disputes and their associated time, cost, and customer-confidence impacts.

We examined ACE's billing practices and procedures, payment receipt, account-crediting practices, and other customer-accounting procedures, seeking to determine whether ACE designs and executes them efficiently and effectively. We reviewed billing processes to determine whether bills are accurate and timely. Liberty also examined staffing levels to determine whether adequate and capable personnel carry out billing functions.

The billing group has responsibility for customer billing and provides input to the revenue accounting process. The group reports to the PHISCo Vice President of Customer Care (refer to the organization chart shown prior). The customer information system (SAP CRM&B), implemented in January 2015 supports the billing and revenue accounting process.

ACE uses cycle billing. Cycle billing assigns customers to 1 of 21 different cycles or portions. Using a series of monthly intervals for each cycle, personnel prepare and mail statements each working day of the month for the designated fraction of the total customer population. ACE bills always link to an actual or estimate meter reading. If a reading is not obtained within the cycle window, the account is estimated for billing. After entry of the meter reading used, the billing rate is automatically determined.

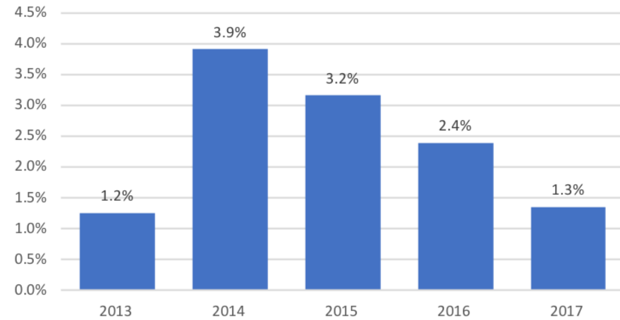
SAP CRM&B performs nightly batch billing-cycle runs to prepare bills for a cycle. A series of procedures calculates bills, adds descriptive text and messaging on each bill, performs error checking, identifies inserts for inclusion with the bills, and diverts any accounts requiring additional handling. PDFs of bills ready to be delivered are addressed, sorted, and printed for mailing, and then transferred to OpenText Document Archives for eBill delivery. An external party prints, places inserts, and mails all bills for the PHI utilities. Any diverted bills return to the billing department for review and for any necessary correction.

A process writes those bills that cannot be generated within a billing cycle to a daily bill-print error log. This step creates a BPEM (Business Process Exception Management Processing), and routes documentation to the appropriate work group for correction. Billing associates review each account that fails, taking actions needed to produce a bill. ACE tracks exceptions on a daily basis with a goal of billing accounts within a four-day window.

The billing of large commercial accounts also operates on the same 21-cycle schedule and under the same application within CRM&B. However, a subset of these accounts are calculated in Lodestar Billing Expert (BE), given bill complexity and the need to use interval data in bill calculation. The Meter Translation team first reviews consumption data to ensure complete interval data. Once validated, the data transfers to Lodestar BE via an application called Data Manager. Billing Associates run an auto bill program that calculates the bills and approves them for sending to SAP CRM&B for invoice preparation. Any data failing auto bill validation undergoes review by Billing Analysts for correction and manual approval, before transfer to SAP CRM&B for invoice preparation. Approximately 30 large customer account bills follow this process each month. These accounts generally include those with highest consumption and demand and tariff authorized rates and surcharges that change periodically.

ACE issues approximately 565,000 customer bills each month to customers. The percentage of estimated bills has declined dramatically since 2014. Weather comprises the primary driver of estimated bills. The next table summarized estimated bill numbers.

Percent of Bills Estimated



Electronic bill delivery can substantially reduce annual billing costs. ACE delivers close to 12 percent of customer bills electronically, up from 10.2 percent in 2015.

13. Metering

a. Meter Reading

ACE has approximately 551,000 electric meters in service. ACE has assigned each customer meter to a meter reading route and each route to a revenue cycle/rendition group. ACE reads nearly all meters manually each month. An affiliate, Millennium Account Services, performs routine manual meter reading, under a contract whose term began in 2006. ACE compensates Millennium on a per-meter-read basis, with incentives for the percentage read accurately. One company meter reader remains in the organization, assisting with meter exchanges.

Each working business day of the read schedule, ACE generates a Meter Read Import (MRI), and imports it into the Itron hand held meter reading system from the customer information system. The MRI contains the designated routes from the cycle to be read. Millennium meter readers cover assigned routes, and enter their readings into their hand-held devices. Meter readers, at the end of the day, return their devices to the office, and insert them into the Itron POD for processing and uploading of their read information.

Typical training for new meter readers includes one day in the office watching videos that address safety, how to read a meter, customer service etiquette, and general orientation. The remainder of the day includes a computer-based meter read training application, during which the trainee simulates meter reading, with measurement of overall accuracy and performance. The trainee then spends a minimum of five days in the field with a supervisor, quality assurance personnel or a senior meter reader. Candidates then undergo evaluation of readiness to work alone.

b. Meter Services

ACE's Meter Service operations group operates within in the Customer Care organization, and has responsibility for system and customer generated service orders. These orders include service turn-on/off, transfer of service, shut-off for non-payment, high bill investigation, off-cycle reads, crossed meters, and unauthorized reconnects. One group in this PHISCo organization supports ACE and Delmarva and a separate one supports Pepco. Meter service technicians conduct the group's principal activities, using mobile data tablets connected to the Advantex system (mobile data). The SAP CRM&B downloads orders nightly to the mobile system. Dispatchers route orders to the appropriate work queues. ACE also employs some limited auto-routing.

ACE's Manager of Meter Install and Testing, reporting to the Manager of Meter Services, has responsibility for procurement, installation, test, and maintenance of ACE's meters. Prior to shipment, meter manufacturers calibrate all new meters in accordance with ANSI requirements. The group relies on a statistical testing plan to determine if the meters received meet its meter specifications, BPU standards, and ANSI limits.

ACE employs three meters types: single phase residential, poly-phase small commercial, and transformer-rated industrial. Management tests single and poly-phase meters on a sample basis to evaluate compliance with ANSI and company requirements. All transformer rated meters undergo annual testing. ACE uses Aclara's Evaluation of Advanced Metering System (EAMS) software to collect and rate results from test boards during the meter testing process.

An annual statistical sample test procedure, filed with the BPU, applies for residential and network meters. Approximately 1,500 meters per year undergo testing under this program. Meter sample testing divides meters into homogeneous groups or lots by manufacturer type. Sample size determination uses the population of meters in the lot. ACE then randomly samples meters within each lot to reach sample size requirements. ACE deems meters testing outside standards as defective and makes customer-account adjustments according to state regulatory rules. ACE also manages all customer requested meter tests, including witness testing, with BPU staff in observation of the tests.

ACE's meter sampling plan, one of the first such plans in the country, has not been updated for a number of years. PHISCo intends to revisit those plans in the immediate term.

The meter shop also inspects any meters pulled for revenue protection purposes. These meters are inspected to validate tampering.

14. Revenue Protection

Utilities have traditionally relied on meter readers and other field employees for the identification of meter tampering and energy diversion. PHISCo uses this approach, and also employs the services of a firm, Itron, to identify billing anomalies that may indicate potential tampering or diversion. A Meter Services & Revenue Protection supervisor, reporting to the Manager of Meter Services, has responsibility for ACE's energy diversion processes, which include investigation, documentation, and testimony. ACE uses bill stuffers and its website to educate customers about energy theft.

Customers can report energy theft anonymously by calling ACE's "Energy Theft Hotline." ACE received 856 theft leads from the hotline, field resources and normal Revenue Protection investigations in 2017, opening 619 for investigation. Theft leads received over the last five years total more than 3,500. Management undertook 2,700 investigations, which produced 30 prosecutions. [redacted]

Management also encourages employees to report possible theft of service. ACE pays a $50 incentive for confirmed theft cases. The following chart details ACE theft of service activities by year. Staffing includes two full-time investigators and part time business analytics and supervision.

Theft-of-Services Activities

Item	**2013**	**2014**	**2015**	**2016**	**2017**
# Theft Cases Opened	913	506	433	425	619
# Theft Cases Closed	704	674	413	390	600
# Theft Cases Adjusted	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Energy Diversion Adjusted	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Meter Irregularity Adjusted	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Unbilled Losses	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Cost of Investigation $	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
ACE Staff*	3	3	3	3	3
Incentive $ Paid	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]

[redacted] The backlog of ACE theft of service investigations peaked in 2013, and has grown continually since 2014 as the following chart demonstrates.

Theft-of-Service Investigation Backlog

(Both Figures are Confidential)

Investigations *Backlog*

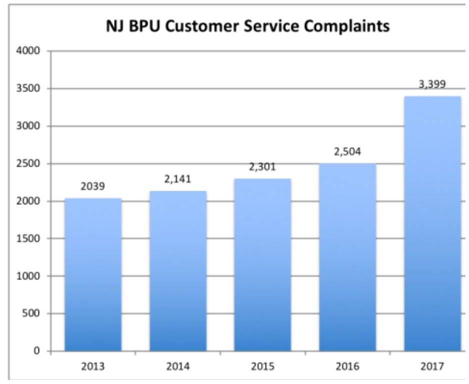
[redacted]

D. Conclusions

1. **ACE regulatory complaints have been increasing since 2013, at levels well above the Board's directive.** *(See Recommendation #1)*

The accompanying chart shows that the number of ACE customer complaints to the BPU has increased steadily since 2013 and by 67 percent overall, reaching a five-year high in 2017. Collection-related activities account for 87 percent of the BPU complaints. As part of the 2015 Stipulation Agreement, ACE committed to institute measures and devote additional resources to comply with the Board's prior directive to reduce complaints to no more than 1,500 per year. Although ACE has instituted a number of initiatives designed to reduce complaints, ACE did not meet this directive as of year-end 2017.

ACE Customer Complaint Rates



2. ACE's Call Centers have successfully staffed to meet service level objectives and performance goals.

The process to forecast incoming-call volumes in order to determine the required staffing to handle those calls comprises one of the most important functions in call-center operation. Labor costs form the principal driver of operating costs; therefore, getting the right number in place is critical in terms of service and cost. A workforce management system, which PHISCo has in place, automates the process of forecasting workload, calculating staffing requirements, creating schedules, and tracking daily staffing and service. Management uses its workforce management system to monitor developments and trends, and to match changes in call volume with intra-day staffing adjustments.

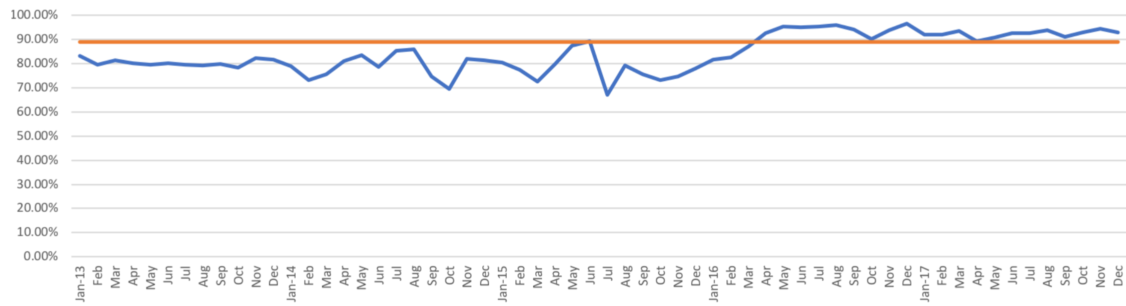
During the past few years, a number of steps have positioned Customer Operations to better manage service levels in real-time and to improve customer contact center performance:

- Daily focus on performance through continuous monitoring of call queues and adjusting resources based on call demand
- Use of "off-phone" resources, including back office and credit associates during times of high call volume as needed
- Call Center work with the Credit area to regulate the outbound credit call activity on busy days
- Participation in a monthly collaborative call with internal peers to discuss upcoming activities that may increase call volumes so that the Resource Management Group can build expected events into resource plans
- Creation of an attendance management program to focus on driving improvement in absenteeism and managing Family Medical Leave Act
- Implementation of a new IVR that offers predictive intent, a Spanish menu, and other menu improvements to boost self-service participation
- First Call Resolution initiative focused on improving issue resolution and the customer experience.

Effective day-to-day management works best when everyone understands service level objectives, when forecasts prove relatively accurate, when management schedules the required level of resources at the right times, and when processes and communication exist to allow intra-day adjustment. Management has successfully staffed its customer call centers to meet its service level objectives, thus providing a more consistent level of service to callers.

ACE strives to answer 89 percent of customer calls within 30 seconds. Performance has generally exceeded this goal since April of 2016, as the next chart demonstrates.

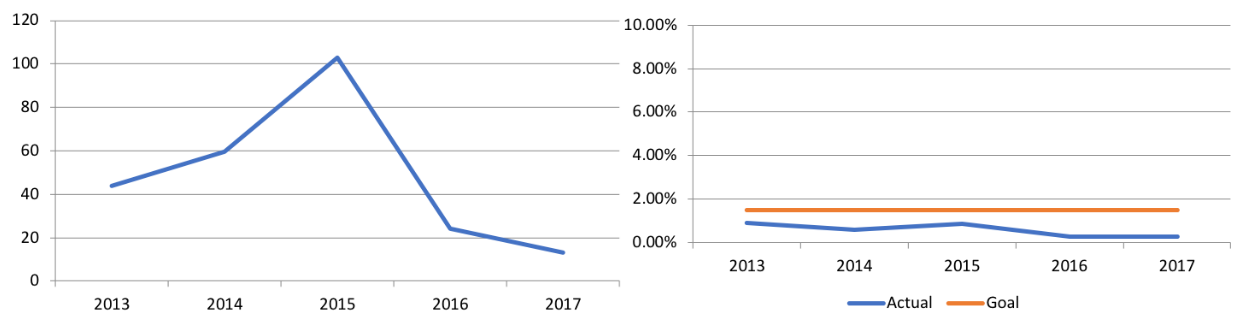
Percent of Calls Answered Within 30 Seconds



Over this same time period, ACE call abandonment rate and Average Speed of Answer have both improved. Average Speed of Answer (ASA) dropped from 103 seconds in 2015 to 13 seconds in 2017. Abandoned calls have also declined, from an average of 0.9 percent in 2013 to 0.3 percent in 2017.

Call Answering Performance Trends

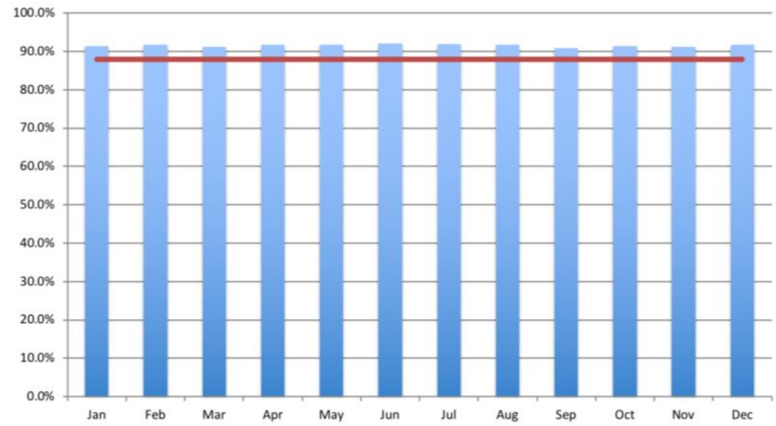
Average Speed of Answer (seconds) *Percent of Calls Abandoned*



3. ACE call center quality consistently exceeded quality goals during 2017.

The next table shows that call center representatives consistently averaged above target quality performance, as measured through call quality observations.

2017 Call Center Quality Performance



The Quality Team monitors three to four calls each month per CSR. Calls are evaluated at various times of the month, randomly chosen from weekdays, nights, and weekends. A third-party, Ulysses Learning, also evaluates one call per CSR each month and provides feedback on CSR soft skills.

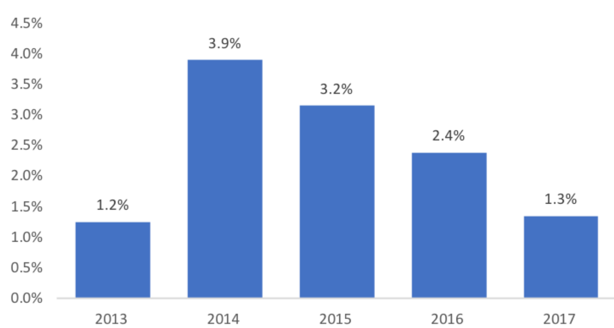
Management has focused on improving customer service representative consistency and quality following the merger with Exelon. Proficiency improved through continuous refresher training, monitoring, and coaching by the supervisory team. PHISCo also implemented Axonify, a learning reinforcement system based on gamification. CSRs are scheduled to participate in Axonify for 5 minutes each day to test their knowledge. Rewards and recognition are built into the system to incent advancement through various levels of difficulty.

4. Meter reading performance has improved since 2014.

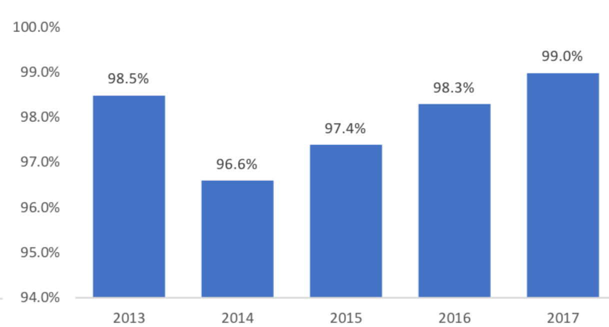
ACE's meter reading performance, as measured by estimated bills as a percentage of total bills has improved over the past four years. Read rate performance has also improved, as the next charts illustrate.

Bills Estimated and Meters Read Performance

Bills Estimated



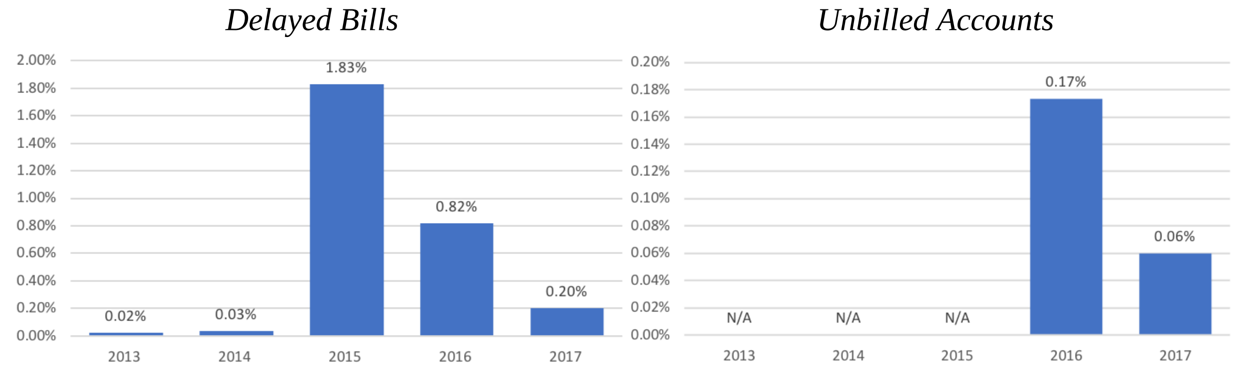
Meters Read



5. Billing performance has improved significantly since 2015 and is approaching pre-SAP CRM&B levels.

Off-scheduled and delayed bills create significant customer dissatisfaction. ACE's total off-scheduled or delayed bills have decreased since 2015, which coincides with the implementation of the SAP CRM&B system. Bills get delayed upon difficulties in getting meter readings necessary to calculate the bill. The percentage of unbilled accounts has also declined since 2015 (SAP CRM&B implementation), as following chart shows. The data shows the number of accounts which did not bill for the indicated month by the end of Cycle 21 of that month. Most accounts are billed within the following month.

Bills Estimated and Meters Read Performance

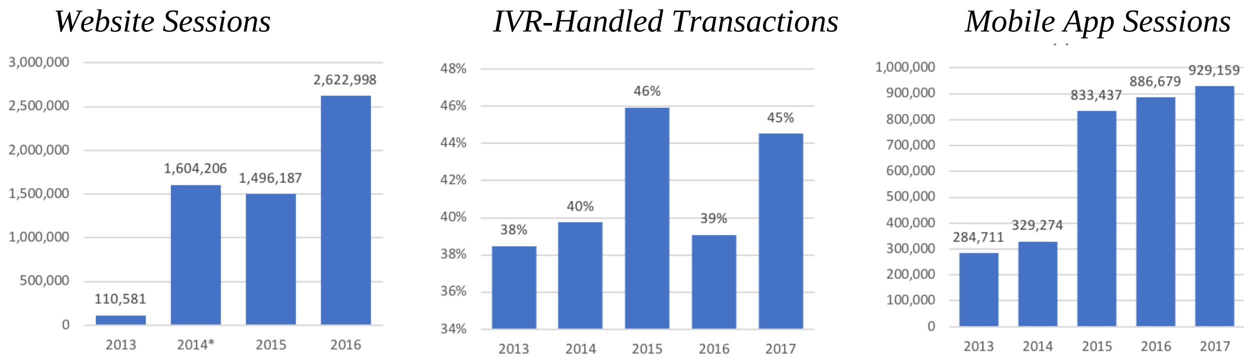


The totals reflect all bills delayed past a four-day billing window. Data prior to 2015 combines ACE and Delmarva results. Billing performance appears to have stabilized following SAP CRM&B implementation.

6. Growth in customer self-service utilization since 2015 has benefitted service-delivery efficiency.

Utilities have for some time encouraged customers to use self-service options, to reduce the percentage of calls requiring agent assistance. Additionally, self-service options are available 24-hours a day. ACE offers several options for customers to self-serve, including: website, mobile app, and automated phone service (IVR). These options present ways for customers to complete transactions without the assistance of a customer service representative. The next two charts show newer options have become increasingly frequent customer choices. ACE customer self-service levels compare to those of the industry.

Web, IVR, and Mobile App Customer Use



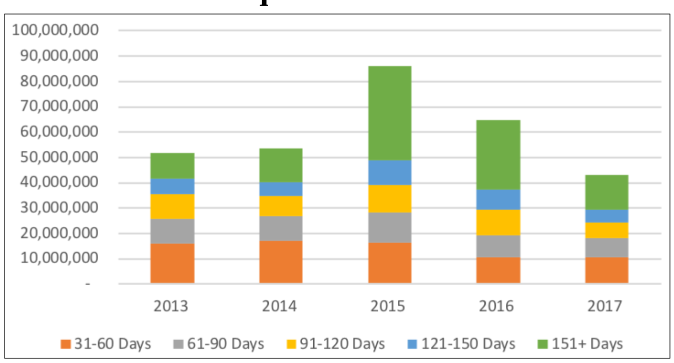
7. Paperless bill adoption by ACE customers lags industry experience. (*See Recommendation #2*)

The ACE percent of paperless bills issued averaged between 10 and 12 percent of total bills during the past three years. The utility industry averages 18 to 20 percent, putting ACE customer participation well below overall experience.

8. ACE's collections performance has improved since 2015.

Management follows a traditional utility collections process for ACE receivables. A utility's best collection tool is the ability to discontinue service. However, the number of accounts "eligible" for disconnection due to non-payment far exceeds the number of field personnel available to process them. ACE's delinquent receivables grew significantly during 2015 and 2016, especially on receivables older than 151 days. These levels have decreased in 2017, as the next chart illustrates.

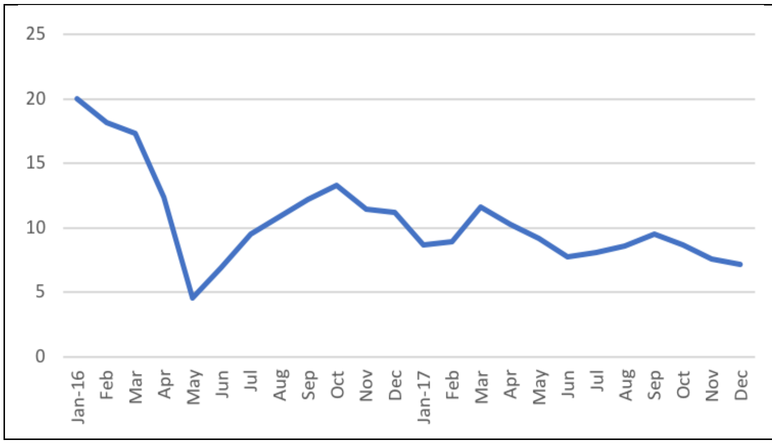
Delinquent Receivables



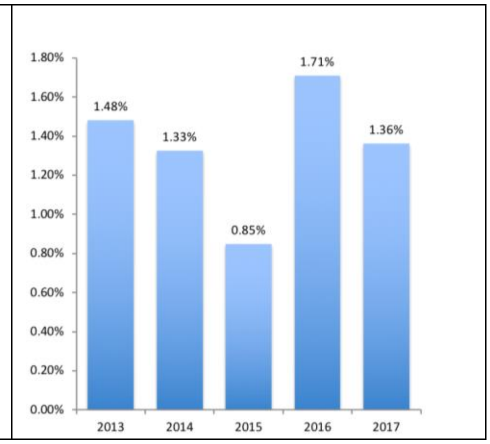
We also found ACE's Past Due Days Sales Outstanding (DSO) decreasing. This metric measures the average number of days to collect revenue after a receivable has aged more than 30 days. Its uncollectible debt, expressed as a percentage of revenue, declined to pre-SAP CRM&B levels.

Additional Credit Metrics

Past Due Days Sales Outstanding



Percent Net Write-Offs



9. ACE customer service Costs peaked in 2015 and have decreased since then.

ACE Customer Service costs peaked in 2015, the year of the customer-information-system implementation. As expected with a transition to a new billing system, billing costs increased in 2014 and 2015 and Customer Care (call center) costs increased by 21 percent from 2013 to 2017. Call volume has increased by 22 percent. During this period ACE also faced merger commitments related to customer service, in conjunction with the Customer Service Improvement Plan.

Since 2015, billing costs have declined lower than pre-CIS implementation levels. Other areas have also decreased, including write-offs, meter reading, and theft-of-service.

E. Recommendations

1. Continue complaint root cause efforts to reduce complaints and to improve the customer experience of customers who are challenged to pay their accounts. *(See Conclusion #1)*

Clearly ACE has struggled over the past few years to reduce the number of complaints to levels directed by the Board. Complaints rates remain high, with efforts to date focused on the customer experience of ACE's most vulnerable customers. Changes to-date to the collection process, especially referrals to available energy assistance have been very positive. ACE should continue to examine complaints to fine tune collection tools and techniques and broaden payment options for customers, especially now that SAP CRM&B has stabilized, and customers are becoming more familiar with changes to the deposit policy and deferred payment arrangement options.

2. Promote paperless billing to increase participation and reduce billing costs. *(See Conclusion #7)*

ACE should actively promote paperless billing options to customers prominently to encourage participation. Paperless billing is well accepted across the nation. The option to join should be readily available on the website and ACE should consider sending email reminders recommending this option. New accounts should be asked to participate when signing up for service and customer service representatives should frequently suggest this service to customers contacting the call centers or courtesy centers.

Chapter XVI: External Relations Table of Contents

Chapter XVI: External Relations

A. Chapter Summary and Background

This chapter examines the organizations and means employed to manage relations with external stakeholders. It addresses corporate communications and regulatory affairs. Chapter XIII, *Finance and Cash Management* addresses investor relations.

When we examined corporate communications at Pepco a number of years ago, it was managed, as it is now, by a PHISCo-level communications organization. Its role has not materially changed since then, but it has substantially reduced its resource complement and in turn annual costs. With ACE bearing a similar share of those costs from year to year, ACE costs for this function have fallen substantially and today's lower cost levels appear sustainable. The PHISCo communications organization continues to address an appropriate range of internal and external communications needs, and has in particular an effective focus on the expanding role of social media in the communications world and on how the PHI utilities can take best advantage of it. There is an effective level of coordination with Exelon-level communications goals, programs, and capabilities, but the function remains managed at and staffed by PHISCo personnel dedicated to the operations of ACE, Pepco, and Delmarva.

Like communications, regulatory affairs remains very much a PHISCo-led and performed function. Its costs have remained stable over recent years. Following the merger, the Energy Acquisition function came to the PHISCo Regulatory Affairs & Strategy group. The group is appropriately staffed, and included resources largely dedicated to ACE matters.

We do, however, have significant concern about the elimination of a separate ACE president. With the departure of the incumbent, that role has been combined with a similar position at Delmarva, leaving no top executive dedicated solely to ACE to serve as a focal point for stakeholder relations in New Jersey. Accompanied by the retirement of a long-term regulatory manager assigned to ACE, the elimination of the ACE executive position makes more difficult the ability to make BPU leadership and representatives and the broader group of New Jersey stakeholders comfortable that there exists a knowledgeable, empowered senior person who can communicate authoritatively to them, closely monitor performance levels produced by EBSCo and PHISCo resources having multi-jurisdictional responsibilities, and serve as a source for getting and reinforcing the significance of stakeholder information, expression of concerns, priorities, issues, expectations, and other important matters to management both near and across the wide footprint across which Exelon's executive leadership and management extends.

We have also found in this audit and in other means of engagement with PHISCo regulatory and in some cases legal personnel acting for ACE, a more reactive than proactive approach to managing BPU relationships. A new ACE president who combines operating, customer, and stakeholder management experience can go a long way to move ACE from what is now an unexceptional to a more robust and likely more effective relationship with regulators and stakeholders. At present, PHI's CEO, its COO, senior PHISCo regulatory leadership, and a senior lawyer who addresses ACE's regulatory needs requiring legal participation, all appear to play significant roles. This combination means that ACE regulatory needs do not lack for attention, but we believe that they do lack a strong source of coordination at a senior level dedicated to ACE. The right kind of person as an ACE president could fill this role if he or she can understand and speak from significant operations, regulatory, and stakeholder relationship management experience. An ACE dedicated regulatory affairs manager responsible for much more than administrative management of "filings" and "proceedings" operating within the regulatory organization, but working day-to-day with an ACE president could also work well.

B. Communications

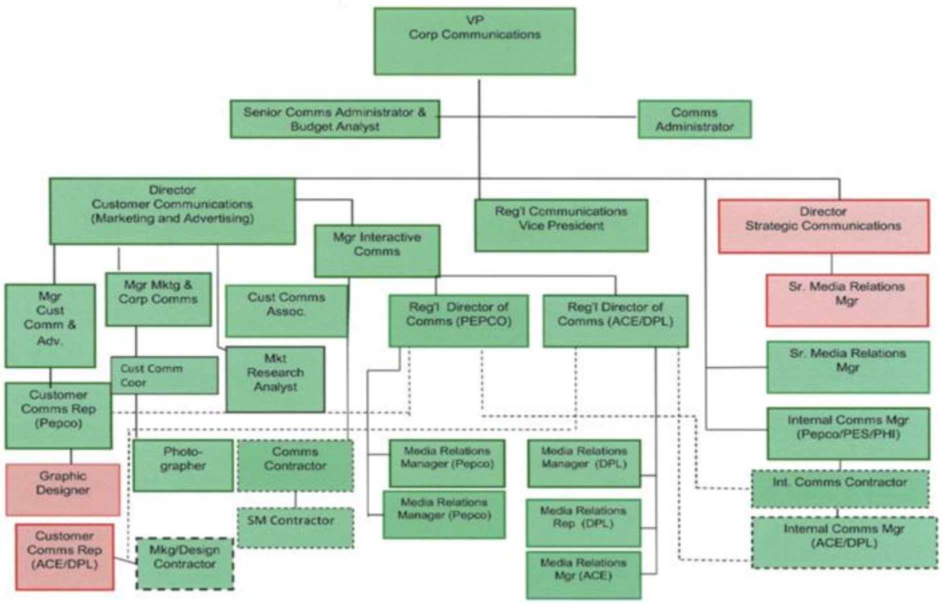
1. Background - - Communications

Effectively managing communications comprises a central element in providing an effective "customer experience." This term captures the entirety of customer interaction with a service provider, including the "products" provided. The term's common use in industry today reflects the importance of the concept it embodies of customer relationship management. The overall "experience" drives how a customer feels about a provider like ACE and what it offers. This chapter discusses overall the role of corporate communications in contributing to that experience, but chapter XV, *Customer Service*, addresses much more directly and comprehensively the factors most directly significant to that experience and how effectively management addresses them.

It is useful to return to the time of our management audit of Pepco to understand the significant transition that has taken place in the corporate communications organization, staffing, and functions. In 2013, Pepco faced significant public concern and mistrust following what stakeholders perceived as excessive outages and durations to restore customers. Top management began a comprehensive effort to improve its communications with customers about service reliability, customer contacts with the company, and outage management. Top management accompanied this effort with a major overall image-building campaign managed under the direction of a new communications vice president. Moving from that time to a more stable period, and experiencing consolidation following the Exelon merger, the organization performing communications functions for and related to ACE has changed considerably.

The next chart shows the large, 31-person organization that these initiatives produced. It worked to an annual budget exceeding $14 million per year in 2013.

2013 PHI Communications Organization



2. *Findings - - Communications*

a. Function

The communications organization designs and implements programs that provide information to employees and to the public. The regular messaging and communications channels it delivers include advertising, a range of social media, releases, regular employee publications, outreach to media representatives, and corporate and executive image and reputation enhancement.

b. Goals

The organization operates under a fairly comprehensive statement of goals and focus areas:

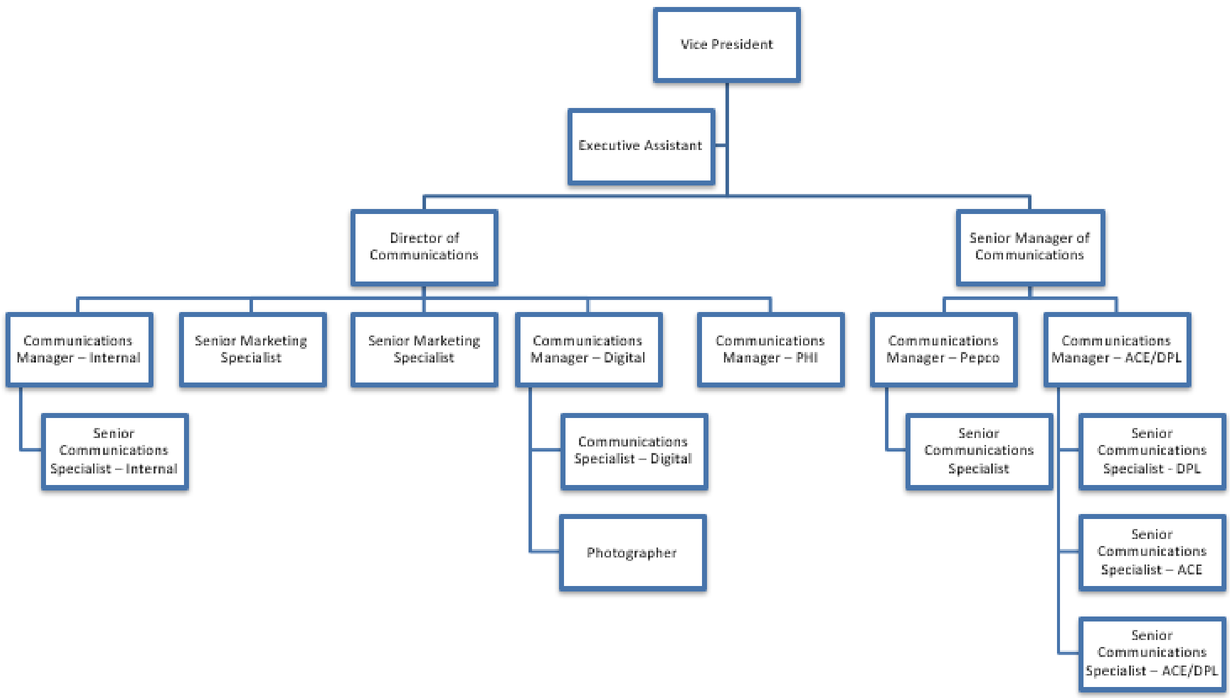
- Goals
    - Researching what customers want, what they like and do not
    - Providing timely, accurate information
    - Modernizing channels - - advancing digital and social media capabilities and use to address identified gaps
    - Strengthening relationships with internal and external stakeholders
    - Synchronizing with Exelon-level communication activities
    - Positioning PHI executives as thought leaders
    - Managing any crises situations effectively and transparently
- Focus Areas
    - Positioning PHI as a "next-generation" provider
    - Proactively generating a news "drumbeat"
    - Converging on Exelon communications platforms and best practices
    - Transitioning from print to digital communications
    - Revamping social media.

The 2018 Communications Plan aligns priorities and initiatives with these goals and areas of focus.

c. Organization and Staffing

The organization has become much smaller. The next chart shows the current staff of 16.

Current PHISCo Communications Organization



The activities performed by the group that operates under the Director of Communications (left side of the above chart) concern all three PHI utilities, and comprise:

- Communications Specialists - - the two specialists manage internal communications, to the employee population
- Marketing - - this two-person organization has responsibility for advertising, principally focused on programs available to utility-customers
- Digital Communications - - this three-person-organization manages utility digital communications
- PHI Communications - - this single manager supports infrastructure-related programs in the District of Columbia and Maryland.

The Senior Manager of Communications (right side of the chart) addresses communications in each of the three operating regions, using two persons dedicated to each utility operation, including ACE.

d. Costs

The next table shows the reduction in communications costs at the PHI level, driven largely by personnel reductions and by shifting accounting for some contractor costs to other departments. The ACE share of those costs has fallen over time.

PHISCO Corporate Communications Costs

(All data in chart is confidential except for the two "ACE Share" lines)

Cost Category	2014A	2015A	2016A	2017A	2018B
Direct Costs					
Compensation[1]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Contractors	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Materials, Equipment, Other	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Leases, Depreciation, Amortization	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Travel, Training and Meals	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Customer Communications/Advertising	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Salary Loaders[2]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Subtotal Direct & Indirect Costs	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Costs from Others					
IT	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Facility Space	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Fleet Vehicles	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
HR Employee & Payroll Service	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
BSC Services (not IT)	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Other Crosscharges	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Subtotal Costs From Others	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
TOTAL COSTS	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
PHI Costs Seconded to EBSCo	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
EBSCo Billed to PHI	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Restatements	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Net Distributed to LOBs	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
ACE Share ($)	*$2,114*	*$2,422*	*$2,888*	*$1,977*	Not Yet Available
ACE Share (%)	*17%*	*20%*	*22%*	*24%*	

[1]Includes labor, incentives, stock-based compensation

[2]Benefits, payrolll taxes, pension, OPEB

3. Conclusions - - Communications

1. Corporate Communications operates under a structure, goals, priorities, initiatives, and activities that support ACE appropriately.

The functions performed typify those required of and performed by public utilities. The organization provides for consolidation of program and content preparation where appropriate, while dedicating personnel at the individual utility level (including ACE) to address local internal and external audiences and maintain relationships with local media. Work is underway to enhance social media capabilities and their use, based on a 2017 analysis of gaps to best practices.

2. The organization responsible for managing corporate communications has witnessed significant cost reductions in recent years, and gives strong indication that it remains on a path to sustain them.

Many fewer resources now manage and perform communications activities, while focusing at the same time on enhancing certain aspects of communications, such as social media. Plans call for maintenance of staffing in coming years.

4. *Recommendations - - Communication*

We have no recommendations in the area of corporate communications.

C. Regulatory Affairs and Strategy

1. *Background - - Regulatory Affairs*

We examined the organization, staffing, costs, and activities undertaken to manage regulatory relations, proceedings, and other interfaces with the BPU and other regulatory authorities. We considered ACE-specific regulatory needs, as well as those (*e.g.*, Federal Energy Regulatory Commission) more generally applicable to the PHI utilities. We examined how regulatory management personnel coordinate work with financial resources, who maintain much of the information needed to address regulatory filings and to ensure complete and accurate factual records in regulatory proceedings. In particular, we examined the degree to which centrally performed regulatory functions focus on New Jersey proceedings and relationships with stakeholders and the BPU. We also examined external costs involved in managing regulatory affairs.

2. *Findings - - Regulatory Affairs*

a. Function

The principal functions of the PHISCo Regulatory Policy and Strategy organization include, as they did before the Exelon merger, performing work to:

- Develop and implement rate strategies for ACE, Pepco, and Delmarva
- Design, file, and administer customer distribution, transmission, Standard Offer Service/Basic Generation Service (default supply) and other tariffs
- Provide the primary interface with the BPU, the D.C. Public Service Commission, the Maryland Public Service Commission, and the Delaware Public Service Commission
- Conduct rate-related financial planning and regulatory analysis

Generally, the group continues to perform the roles and functions it did before the Exelon merger. It coordinates its activities with the other Exelon utilities through the oversight provided by the Exelon Utilities organization. That Exelon-level organization, operating under a very senior Exelon executive, also provides for regulatory affairs the same peer group process that benefits the major functions of all the Exelon utilities through regular communications on matters within Exelon and across the U.S. utility industry, and that provides a forum for identifying best practices and efficiency-enhancing measures. EBSCo does not play a significant role in providing common regulatory services for the PHI utilities.

Post-merger, the PHISCo Regulatory Policy and Strategy organization has taken on responsibility for performing energy-related functions for ACE, Pepco, and Delmarva, all of which operate in restructured markets that include some form of standard offer service akin to New Jersey's Basic Generation Service:

- Energy Acquisition
- Load Analytics

- o Market Settlements & Wholesale Billing Administration; and Energy Supplier Services.

With this addition came gas supply as well; Delmarva serves over 120,000 natural-gas-delivery customers in northern Delaware. PHISCO's Power Supply organization had previously managed these energy and gas supply functions.

b. Goals

The 2016 goals of the organization focused on:

- Support for securing merger approval in the PHI jurisdictions and execution of Exelon/PHI integration efforts
- Conclusion of MFN discussions and completion of Merger Commitments
- Developing and executing a rate case filing strategy
- Completing department reorganization and succession planning.

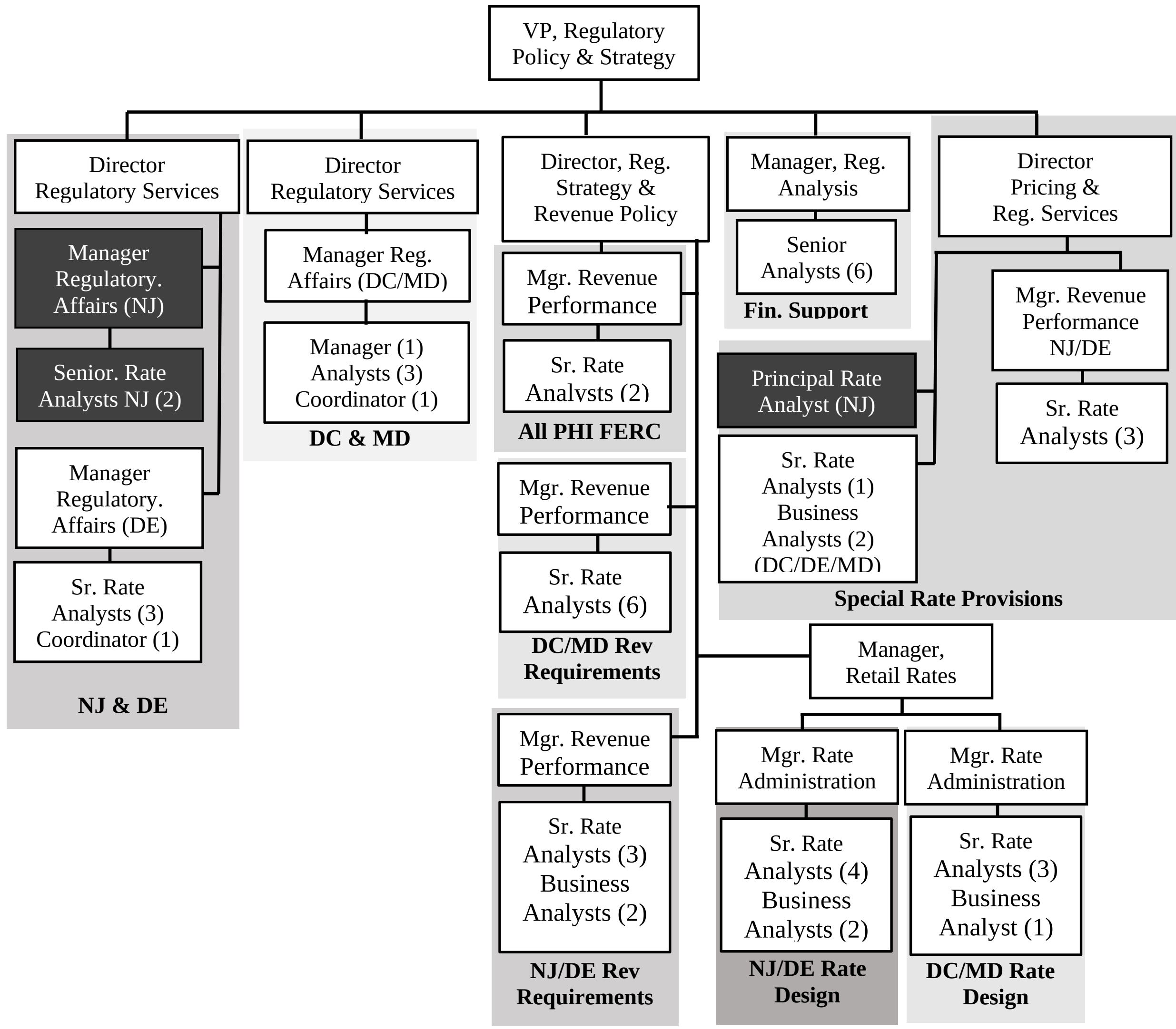
The first-listed 2017 goal of the organization focused on achievement of favorable rate case results in four cases filed in 2016, and the planning of rate case filings for 2017 and 2018. The second addressed legislative and regulatory solutions to "advance alternate ratemaking." The third sought to permit PHI a role in shaping modernization and renewables proceedings and discussions. The fourth addressed execution on what the organization's goals described as the 675 Exelon merger commitments. The fifth related to a District of Columbia-specific initiative.

c. Organization and Staffing

Exelon has consolidated a number of corporate and support functions at the EBSCo level, but has not done so for the PHISCo regulatory policy and strategy organization. The Exelon merger has not significantly affected responsibility or staffing (numbers or location) for the conduct of rate and regulatory affairs at the PHI utilities. Responsibility for these activities remains centralized at PHISCo, with some resources dedicated to the three operating utilities, including ACE. EBSCo has made no charges to PHI, PHISCo, or ACE for regulatory services. No charges come to the PHISCo regulatory organization from Exelon or EBSCo, nor do any go from the PHISCo organization to Exelon or any of its entities. PHISCo's Vice President, Regulatory Policy & Strategy reports to the Senior Vice President, Legal and Regulatory Strategy, keeping direction of the group's activities at the PHISCo level.

The next chart shows the organization, excluding the Energy Acquisition organization, whose Director also reports to this same VP. Chapter III of this report addresses the responsibilities and activities of this 36-person group. It has responsibility for securing and managing energy and relationships with third-party suppliers. Its functions include New Jersey BGS procurement and management, similar procurement and management of standard offer or similar services in the other PHI jurisdictions, management of NUG (non-utility generation) contracts, settlements under energy procurement agreements, PJM reporting, and load analytics (researching load and billing issues).

PHI Regulatory Policy & Strategy Organization



Staffing has remained stable in recent years at about 61, increasing in 2018 to 64. The groups operating under the two Directors, Regulatory Services shown in the preceding chart manage the approximately 1,500 state utility regulatory commission and FERC filings made by the PHI utilities. Prior to the Exelon combination, a single Director had responsibility for all PHI utilities. Creation of the second Director position has allowed a narrowing of focus of the Director responsible for New Jersey to just one other state - - Delaware. PHI dedicates the three-person group shown in the darkest shaded boxes in the left column of the following chart to the New Jersey portion of those work activities.

Support for revenue requirements and rate design operates under a third Director, for Regulatory Strategy and Revenue Policy. This director's resources are aligned generally by operating company, with New Jersey and Delaware sharing personnel largely focused on those states.

A fourth Director, for Pricing and Regulatory Services, uses a similarly state-aligned structure to address other principal rate, regulatory matters, such as BGS or equivalents in other states, surcharges, and rate treatment of regulatory assets. The Manager, Regulatory Analysis, the fifth direct report to the Vice President, Regulatory Policy & Strategy, provides financial support for the entire regulatory group, and provides support for testimony and rate/regulatory portions of financial presentations.

A sixth direct report to the vice president manages energy acquisition. All of the PHI jurisdictions permit third-party retail supply and provide for some form of BGS or standard-offer-type services. PHI moved this group to Regulatory Policy & Strategy to align with Exelon's view, which considers energy acquisition in this environment more closely related to regulatory than operational circumstances.

In early 2018, the Utility of the Future group moved into the Regulatory Policy and Strategy organization as well. This organization, provides a source of coordination in examining new initiatives that involve convergence between technical development and regulatory engagement *e.g.*, electric vehicles, battery storage, advanced metering, and grid modernization).

d. Costs

For the PHISCo Regulatory Policy & Strategy organization, costs have remained fairly stable through and following the merger, as has the ACE share of those costs. Internal personnel comprise the primary source of costs, except for outside legal resources in regulatory proceedings. The group has made limited use of other outside resources generally and for ACE. Rate-of-return witnesses in rate proceedings were the only cited example of recurring use of outside resources other than counsel. On average total PHISCo-wide costs have grown by two percent per year since 2014. Increased compensation accounts for all of that growth. The following table details the group's costs (in millions of dollars). The table excludes costs for the PHISCo Senior Vice President, Legal & Regulatory. The $5.8 million restatement shown for 2018 accounts for costs previously accounted for under other cost centers (and shown largely in the Outside Counsel, Contractors row):

- $5.2 million in for incentive, retirement, pension costs (previously under Executive Management)
- $600,000 in legal costs for regulatory proceedings (previously charged to Power Delivery).

Regulatory Policy and Strategy Cost History

(All data in chart is confidential except for the two "ACE Share" lines)

Cost Category	2014A	2015A	2016A	2017A	2018B
Direct Costs					
Compensation[1]	[redacted]				
Outside Counsel, Contractors					
Materials, Equipment, Other					
Leases, Depreciation, Amortization					
Travel, Training and Meals					
Salary Loaders[2]					
Subtotal Direct & Indirect Costs					
Costs from Others					
IT	[redacted]				
Facility Space					
Fleet Vehicles					
HR Employee & Payroll Service					
BSC Services (not IT)					
Other Crosscharges					
Subtotal Costs From Others					
TOTAL COSTS					
PHI Costs Seconded to EBSCo					
EBSCo Billed to PHI					
Restatements					
Net Costs Distributed					
ACE Share ($)	*$2,749*	*$2,898*	*$3,199*	*$3,426*	*Not Available*
ACE Share (%)	*21%*	*22%*	*22%*	*24%*	

[1]Includes labor, incentives, stock-based compensation

[2]Benefits, payrolll taxes, pension, OPEB

The next table shows the ACE share of the costs of the PHI Regulatory Policy & Strategy organization. That share has been stable for several years. The share of all the PHI utilities fell in 2015, because of a $773,000 charge to PHI corporate.

Shares of Regulatory Policy & Strategy Costs

PHI Entity	2017	2016	2015
ACE	23.0%	22.0%	20.7%
Pepco	42.5%	44.0%	41.9%
Delmarva Electric	26.8%	25.6%	23.3%
Delmarva Gas	4.2%	4.9%	4.5%
SOS/TUB	3.3%	3.3%	3.6%
PHI Corporate	0%	0%	5.8%
Total	***100%***	***100%***	***100%***

3. Conclusions - - Regulatory Affairs

3. PHISCo's continued management of regulatory affairs on a consolidated basis for the PHI utilities has served to provide an appropriate focus and level of attention on New Jersey regulatory requirements and expectations

Management of regulatory affairs for the PHI utilities remains at the senior PHISCo level. EBSCo, under which Exelon has centralized management of a number of post-merger corporate and support functions, does not play a visible role. The PHISCo organization continues to dedicate resources to ACE specifically, while providing for common management of the variety of analytical functions it takes to ensure that regulatory proceedings make accurate and effective use of financial and operating data. The group is large enough to permit specialization in the various areas of expertise required. Placing the Energy Acquisition Group under the PHISCo organization responsible for managing regulatory affairs reflects two important aspects of its role:

- The significant regulatory requirements and processes surrounding BGS purchases by ACE and the other New Jersey electric distribution companies
- The need for: (a) strong recognition of the very large role Exelon Generation plays in the state and for ACE power supply, and (b) clear, well-structured, comprehensive controls to ensure arms'-length dealing in contracting for and managing purchase arrangements with that affiliate.

Our engagement with resources dedicated to New Jersey operations, both in this audit and in our recent state-wide review of BGS activities showed them to be very knowledgeable and experienced.

4. We found the regulatory and stakeholder management personnel dedicated to New Jersey-specific activities sufficient in number and knowledgeable, but eliminating the separate ACE President role risks a loss of important local knowledge and contribution to effective management of regulatory affairs and stakeholder expectations. *(See Conclusion #15 and Recommendation #6 from the Governance and Executive Management Chapter (IX), and Recommendation #1 of this chapter)*

The dedicated ACE lead executive that Exelon eliminated served within the PHISCo Government and External Affairs organization. The Governance and Executive Management chapter addresses the important contributions threatened by eliminating the separate ACE President role. We do not question the intention of the person filling the role that combines New Jersey and Delaware. However, the need for adding senior "ears and eyes" in the state, and a senior "voice" has great value to:

- PHI's top executive leadership
- The PHI board
- The PHISCo Chief Operating Officer and his team responsible for operating the network and providing customer service
- PHISCo regulatory, government affairs, and communications leadership.

All these sources of direction to what happens in New Jersey have multi-state responsibilities, albeit with reliance on a substantial number of resources dedicated to the individual jurisdictions. Resources include governmental affairs personnel dedicated to New Jersey operations. We do not see a need to replicate resources at that level, but rather to provide a New Jersey voice at the executive table. Less significant is the "portfolio" of responsibilities and accountabilities of the person with that voice.

Greatly significant is the establishment of an individual with significant operating and external relations experience, giving that individual a visibly important stature, creating stakeholder reliance on that individual's ability to get information to a group of decision makers (of which he or she is a part) and getting executive leadership and the PHI board's trust and confidence in that individual's ability to bring from stakeholders important information about all aspects of New Jersey operations and service, and getting back to them clear answers, commitments, and solutions in which they can have confidence.

5. PHISCo has operated under an approach that promotes effective relationships with the BPU, albeit more reactively than proactively. *(See Recommendation #2)*

Our work included examination of many reports about ACE. For example, we reviewed extensive information produced over 10 years in preparing our analysis of the reasons for weak ACE financial performance (see Chapter II, *Evaluation of ACE Financial Performance*). We have also examined many organizational, operations, reliability, customer-service, and other reports filed in connection with merger commitments. We looked at other reports in the context of our statewide examination of New Jersey BGS procurement - - an engagement that gave us an opportunity to compare directly ACE's reporting and responsiveness to our information requests with those of the state's other electric distribution utilities. We also had extensive opportunity to work with PHISCo regulatory personnel in seeking to get support for our information requests from Exelon organizations sometimes operating far away from New Jersey.

We found a cooperative approach through all these sources of observation. PHISCo personnel provided our most common sources of information in this engagement. Their responses to our requests, while often somewhat slow, took a broad view of our questions and a helpful approach in identifying and providing useful information. Comparing required reports with checklists of required content showed reasonably full compliance, even with respect to sometimes small details.

Getting information from Exelon occasionally proved difficult, but perseverance by PHISCo personnel eventually succeeded, although again not without delays. From a bigger-picture perspective, however, our work produced the sense that management operates more effectively in making and marking off those checklists for required reports and communications than in proactively identifying emerging issues and conditions warranting outreach communications.

For example, see Chapter VI, *Focused Operations Review*, and Chapter V, *Capital Allocation*, which explain how far ACE has come in improving reliability and how its rapid and strong ascent into the first quartile of comparable utilities, calls for revisiting plans and expenditures on reliability. With the time for dialogue about reliability investment and its consequences for rates due, management reported in comments on a draft of this report actions have been taken since completion of that draft. Another example lies in Advanced Metering Infrastructure. Management, in our view, appeared to be relying too much on what it saw as precedent set by another utility - - refraining from presenting its own "case" for stakeholder consideration. Again, management's comments on a draft of this report indicate that ACE has since file an AMI business case and feasibility study. Another example lies in the lack of an understanding that appears for some time to have existed between management and stakeholders about ACE's long-standing weak financial performance despite frequent rate cases.

Examples like these underscore the need for a greater effort in identifying "big issues" that would benefit from promoting dialogue and understanding even where current reporting requirements do not exist. Chapter IX, addressing *Governance and Executive Management*, discusses a recent reorganization at Exelon Utilities, driven in part by major industry change and a focus on rate and regulatory initiatives suggested by such change. The search that this reorganization portends offers another example of where regulatory communications outreach appears to have great merit. Certainly, it is difficult to see how that search can stay on track without significant interaction with stakeholders in the regulatory process, including those of New Jersey.

4. Recommendations - - Regulatory Affairs

1. **Restore the ACE-only President position.** *(See Conclusion #15 and Recommendation #6 from the Governance and Executive Management Chapter (IX), and Conclusion #2 of this chapter)*

The details and justification for this representation are set forth in the references provided. Its particular significance here is its importance in ensuring that the ACE presidential roles we envision includes close coordination with the Regulatory Policy & Strategy organization in addressing New Jersey regulatory requirements, stakeholder expectations, and ACE's position as a major state business operation and corporate neighbor.

2. **Develop a program for regular outreach with the BPU and with New Jersey stakeholders.** *(See Conclusion #3)*

On the whole, we consider the PHISCo Regulatory Policy & Strategy organization effective and efficient in its work for and involving ACE. Despite that strength, however, the time appears ripe for it to take a step forward. Reaching the first quartile in reliability performance has been an aspiration not a goal, but ACE has reached it well ahead of the 2020 date set. That success has come at significant cost. It is time for a re-definition of reliability goals and expenditures to achieve or maintain them. That re-definition will be well served by a comprehensive, structured, numbers-supported dialogue with stakeholders and the BPU. Rate case continuation with resource reductions on the immediate horizon also illustrates the need for proactive dialogue, outside the constraints of proceedings that focus on the past, not the future.

Advanced Meter Reading looms as a possibility - - its merits too would benefit from similar dialogue. With Exelon Utilities also reorganizing to support broad consideration of where the industry is going and what regulatory constructs fit that future, it is important to keep New Jersey a part of that exploration. This Exelon effort should be informed by input from even the smallest segments of utility operations - - like those in the ACE serving region and state policymakers.

Many factors make development, in consultation with the BPU and stakeholders, of a series of dialogues important:

- Exelon's overall redirection of growth toward its utilities
- PHI's passage beyond the post-merger transition period to sustained operation in a new corporate environment
- Exelon Utilities' desire to examine changes in its future roles in serving customers
- Exelon Utilities' search for ratemaking approaches and techniques that best support those roles and utility growth

- A series of key operational issues facing ACE customers and stakeholders (*e.g.*, reliability spending, Advanced Metering Infrastructure, and resource reductions from the ACE to the EBSCo level that, based on discussions with senior Exelon and PHISCo leadership appeared to be in the offing)
- Confirmation of the value and importance of actions to meet ongoing merger commitments, and if appropriate, adjustment to them.

PHI should work with BPU and stakeholder representatives to develop an agenda for a twelve- or so-month series of presentations of and dialogue about issues that all agree have "big picture" consequence. This agenda should be closely coordinated with (and provide New Jersey stakeholders substantial visibility on):

- What Exelon's redirection to utility growth means for the state
- Changes in approaches to recovering utility costs before they become part of corporate strategy
- How leadership plans specifically to maintain ACE financial health under rates that present a sustainable path for customers.

Chapter XVII: Distribution and Operations Management Table of Contents

Chapter XVII: Distribution and Operations Management

A. Chapter Summary

Chapter VI, *Focused Operations Review*, addressed four specifically identified aspects of ACE system operations and management:

- Reliability programs
- Electric system resiliency
- Current restoration capabilities.

This chapter addresses, as the RFP requested, the more general topics of overall operations management (operation, maintenance, and reliability) and system planning. The Focused Operations Review chapter covers much of management and operations related to these more general areas. That chapter also addresses the deployment of a number of smart grid technologies, introduced or expanded at ACE as part of the reliability, resiliency, and restoration initiatives described there. We therefore address smart grid deployment more generally in this chapter as well.

A review of this chapter should begin with a review of Section A of The Focused Operations Review, which summarizes reliability, resiliency, and restoration programs, initiatives, and activities - - all central elements of effective distribution and operations management. We found in the more general review described in this chapter that PHISCo, managing these areas for ACE, Delmarva, and Pepco, applies an effective organization, operating under direction and resources sufficiently capable in experience and numbers, under methods and procedures that conform to good utility practice.

We found that Exelon has brought significant improvement to PHISCo's efforts, enhanced through an Exelon-wide peer group process that seeks to identify and implement best practices from around the system, continually apply a broad set of metrics (Key Performance Indicators) that focus management attention on measurable reliability and efficiency improvement, and bring discipline and quantitative analysis to decisions about where capital and O&M dollars can be most effectively spent.

Methods for planning, scheduling, and tracking field work reflect good utility practice, benefitted by the introduction of a new, well-structured Work Management organization. Senior management engages through a series of reports and meetings (ranging from daily to quarterly and annually) regularly in appropriate, quantifiable monitoring of performance, focusing on important measures of work completions and costs. PHISCo has provided for ACE sufficient and experienced operations and maintenance management and other resources, with staffing sufficient to accomplish planned work, and manage crew performance effectively. The Distribution Engineering organization, resources, processes, and practices employed to serve ACE's needs are also appropriate, as are the organization and resources applied to ACE transmission and substation field operations.

Inspection and maintenance activities operate under effective plans and cycles, and management performs the required activities timely. The post-Exelon-merger introduction of Fix-It-Now teams dedicated to high priority corrective maintenance items is a notable strength. Management has equipped field resources with digital tools and software effective in ensuring work identification, planning, execution, and tracking. A move from the PHISCo legacy system to an Exelon platform should produce added benefits.

Turning to planning, we found an appropriate and sufficiently “local” planning organization and engineering support to perform planning for ACE facilities. The organizations are appropriately staffed, structured, and empowered to address the needs of the ACE network. Planning organizations and personnel employ clear and effective means for identifying projects intended to ensure continued reliability, guided by long-range plans executed with the flexibility needed to address emergent conditions and circumstances.

System planning has applied thorough justification and estimating processes to system planning, but room remains for improvement in estimating accuracy. *We have recommended* that management routinely analyze for projects experiencing significant estimated-to-actual cost variances the sources of those variances, and that management validate the effectiveness of a new estimating tool just being introduced to address the causes of variances. ACE’s 2016 and 2017 RIP capacity expansion spends exceeded budgets by more than $10 million. We also found that management has effectively executed capacity expansion projects, using appropriate organizations and performance monitoring and management.

We dealt extensively with the use of smart grid technology under our focused operations review, described in Chapter VI. Here we reviewed planning and prioritization of projects forming part of the various initiatives described in that chapter.

We found a clear and comprehensive approach in examining the use of technology to support operations efficiency and reliability. The ACE’s Smart Grid Pilot program initiated some years ago was well identified, scoped, and executed. Management continues today to perform well-structured, quantitatively supported means for assessing alternatives for reliability and resiliency improvement work. Formal processes supported by automated tools guide the prioritization of ACE RIP and Distribution Automation programs. The processes routinely apply quantification of benefits in a way that permits valuing them against costs, which produces a clear way for comparing alternatives. Prioritization also considers the ability to take advantage of already-installed communications infrastructure.

Deploying automatic circuit reclosers, an important part of recent efforts on the ACE system, produced significant reliability benefits. Estimates are that in one year (2017), they avoided over 250,000 customer interruptions and over 19 million customer minutes of interruption. Estimates of the benefits of another form of “smart” deployment, automatic sectionalizing and restoration schemes, already installed include over 34,000 customer interruptions and about 2.9 million customer minutes of interruption since their installations.

B. O&M Management - - Background

Our Chapter VI, *Focused Operations Review*, found the system management and operations activities performed under the direction of PHISCo for the ACE system generally effective with respect to asset management philosophy, inspection and maintenance programs, and inspection and maintenance completions, and compliant with BPU orders and N.J.A.C. requirements.

This section describes our examination of: (a) Work Management organization, (b) the organization's planning, tracking, and scheduling of O&M work from scheduling through completion, (c) how senior management monitors and evaluates performances, (d) the use of Key Performance Indicators (KPIs), (e) transmission and distribution field operations, (f) the corresponding engineering organizations, (g) management of inspection programs, (h) the use of work management scheduling, tracking, and digital data gathering systems and tools, and (i) the sufficiency of skilled resources.

C. O&M Management - - Findings

1. Work Planning and Management Structure and Responsibilities

Management employs both short- and long-term processes for determining future resources and budgets. Each year, management creates annual Long-Range Plans with five-year horizons (See Chapter V for a fuller description of the development and use of these "LRPs"). Each organization builds its own long plans for presentation to senior leadership as part of the LRP process. PHISCO develops for its three utility operations 18-month work plans, using the 5-year LRP as a foundation. Monthly reviews provide a slotted occasion for balancing budgets and resources as work unfolds. These 18-month work plans in turn serve as the bases for each organization's development of Quarterly Work Plans.

PHI and ACE transmission, substation, and distribution leaderships attend monthly Peer Group meetings, and participate in conference calls with others with similar responsibilities at the other Exelon utilities. These meetings consider best practices, methods alignment, and performance consistency among the operating utilities. Post-merger improvements include work scheduling, tracking, oversight processes, and the initiation of distribution and substation Fix-It-Now (FIN) crews. Measures like these have improved on-time completions of maintenance tasks.

Management's planning, scheduling, and tracking of field work employs new Work Management organizations (one for distribution and the other for transmission and substations). These groups focus on timely and accurate project preparation, implementation, completions, and performance reporting. PHISCo initiated this new organizational approach in 2017, to improve the effectiveness of its resources to complete inspection and maintenance work. Before instituting the Work Management organizations, PHISCo's distribution, transmission, substation operations supervisors, and their planners, had responsibility for their own work planning, scheduling, and management, with budgets serving as the primary driver. Management did not measure schedule and completion performance in a unified manner. The one central organization that did exist, Integrated Work Coordination, focused more on longer term resource needs.

The two organizations provide overall governance and oversight to coordinate the safe and efficient execution of the Quarterly Work Plans. The two groups develop Work Control Schedules to optimize the use of internal and contractor resources for meeting customer and internal operations completion dates for emergent needs, planned corrective maintenance, new business, preventive maintenance, and system reliability.

Work Management resources coordinate with System Operations, District Operations, Transmission and Substation Electric Maintenance, and Transmission and Distribution Engineering groups to generate weekly, comprehensive "T Week Schedules." Data reflecting performance against these schedules supports performance measurement and feedback supporting improvements. Work is now tracked and managed through KPIs tracking:

- Corrective Maintenance completed
- CM backlog
- Preventive Maintenance completed
- Backlogs and past due corrective and preventive maintenance items.

Work Management personnel do not schedule high priority, short completion time corrective maintenance work. District Operations or Electric Maintenance Fix-It-Now teams address these items directly. However, daily phone calls that include Work Management and the Operations Control Center monitor completion timeliness of these items. When emergent activities temporarily reduce the availability of resources for program inspection, maintenance, and repair work, Work Management prioritizes scheduled work by priority, generally reflected by need date. Work Management personnel can retain contractor resources to address corrective maintenance backlogs, but PHISCo's centralized Project Management and Construction Organization contracts resources for large, Centrally-Managed projects (those typically costing more than $500,000).

The distribution Work Management organization for ACE District Operations includes a Work Control Coordinator, four Work Week Managers, and six work planners. The work planners (schedulers) work from the Districts. Distribution work planning begins with an overview at week T-15 (fifteen weeks ahead), moving to work scheduling at seven weeks out. Work Management evaluates labor resource availability, and determines whether corrective maintenance items and district-managed projects (typically those less than $500,000) will go to internal or contractor line crews.

Between T-7 and the week before scheduled date, Distribution Work Week Managers and Planners collaborate with distribution engineers and district supervisors to ensure job information and resource availability. They also collaborate with the Distribution Operations to plan and schedule maintenance outages. The process calls for completion of all work planning elements during the T-3 "stability" week. During the last week before work start, an assigned Distribution Work Week Manager ensures readiness of resources and switching and lockout procedures, and notification/scheduling of traffic control and "1-800 DIG."

The Transmission and Substation (Electrical Maintenance) Work Management organization responsible for ACE facilities includes a Work Control Coordinator, two Work Week Managers, and four Planners (work schedulers). The Coordinator plans and schedules electric maintenance projects and preventive and corrective maintenance work 9 to 12 months ahead, given needs for specific equipment tools, parts, materials, and outage coordination with System Operations. Work Management determines whether to use internal or contractor resources for transmission and substation work. ACE line workers have first opportunity (versus contractors) to conduct corrective maintenance on 69 kV and 138kV transmission lines.

A Work Week Manager ensures resource, equipment, and job information availability, and scheduling of system switching and outages during the T-4 and T-3 weeks. The other Work Week Manager takes over from week T-2 to job start.

2. *Work Management Digital Tools*

ACE's Work Management during our audit field work used SAP-PM (project management) software for scheduling maintenance work, WMMS for capital work, and electronic spreadsheets for scheduling. During our fieldwork, both SAP-PM and WMMS were being replaced to reduce job scheduling time and effort. The new capability will be provided by Exelon's combination of Asset Suite 8 for job orders and Primavera P6 tool for scheduling.

First Responders and Crew Leaders use mobile data terminals for work orders and tablet computers with embedded system maps. Distribution inspection contractors enter data into tablets, with data transmitted to accessible storage locations. Electric Maintenance was moving from paper substation inspection forms to tablet computer use.

3. *Performance Monitoring and Oversight*

A series of metrics address completion of inspection, maintenance, and repair work. Outages taken, work activities, and variances from metrics undergo daily discussion with senior management. Work Management personnel meet daily to discuss assigned work for the day and past due corrective maintenance managed through PHISCo Central Engineering. Monthly work completion reports undergo senior-level discussion as well.

At the more detailed level, all corrective maintenance orders enter a comprehensive Work Management Information System and a Work Management business analyst tracks all of them. Work management and the appropriate engineering and operations groups review distribution job scheduling and completion performances weekly and transmission work every other week. Management measures work spend and completion performances using consistent KPIs.

Management used work-down curves in 2017 to track focused initiatives, including the Circuit Patrol Inspection Program, Wood Pole Inspection Program, Pad Mount Transformer Inspection Program, Recloser Inspection Program, Capacitor Inspection Program, and Regulator Inspection Program. It no longer regularly uses such programs, instead using its digital work management system for tracking them. Monthly Work Management analyses of maintenance work KPIs (*e.g.*, spend versus budget) identify areas where performance falls short of targets. The five principal KPIs that regularly track maintenance work derive from five-year targets set every year. Monthly KPI performance reviews generate any required recovery plans or changes to targets deemed unachievable.

The next table lists the five KPIs that track preventive and corrective maintenance items.

CM and PM Key Performance Indicators

Activity	KPI
PMs Completed	Tracks PM completions against monthly targets
PMs Overdue past Grace Period	Tracks PMs that have gone overdue
CM Completed	Tracks CM completions against monthly targets
CM Backlog	Tracks open CM work orders on the system
All-In Passport	Tracks all activities/all systems

System Operations leads daily morning work-screening calls to review all corrective maintenance orders. Assigned Fix-It-Now teams complete the high priority orders (Priority "10" and "20") immediately. Work Management's Work Control Coordinator schedules the less critical Priority 30s and 40s, monitoring the backlog to sustain timely completion.

Daily KPI operational calls and monitoring and monthly progress reviews enable the Maintenance Standards organization to address issues involving timely completion of Inspection Programs. The next table describes the purpose of periodic performance calls.

Periodic Performance Monitoring Calls

Period	Purpose	Participants	Discussions
Daily	Operations	ACE Operations Personnel	Review prior day major outages, discuss necessary follow-up and day-ahead work and resource plans, highlight overdue CM items with dates for overdue orders
Daily	Engineering	PHI Central & ACE Engineering	Review each operating company's major outage events from prior day, causes, actions taken, follow-up needed, and opportunities to prevent similar outages
Daily	Executive Management	COO, VPs, Directors, and Managers	Review operational, security, safety, IT, Call Center, and other issues from the prior day
Weekly	Reliability Review	ACE Reliability, Operations, Engineering	Review prior week's events and causes and any follow-ups, review data accuracy
Monthly	Management Review	COO, VPs, Directors	Review operational KPIs and status of maintenance items outstanding, set dates for overdue orders

4. District Operations

Leadership at each of the four ACE operating districts manages its own distribution first responders and line crews assigned to new business and Fix-It-Now repairs. The large Glassboro and Pleasantville District operating areas have produced satellite operating centers in each. Each District Operations Manager has three reports; a Supervisor of Overhead Lines, a Supervisor of First Responders, and a Supervisor of URD (underground residential distribution). District Managers participate in weekly calls and monthly meeting with managers and supervisors to discuss operations and safety issues and problem resolution.

District Operations focuses on directing and monitoring internal crews addressing new business, reliability work, overhead equipment maintenance, and some district-managed construction work (smaller capacity expansion and reliability projects). They also address distribution overhead and underground residential development maintenance, using Fix-It-Now and regular underground crews. Each district office has line personnel trained to repair and replace underground residential cable, but a separate Underground Department repairs and replaces its main line cables in duct banks. District Operations also provides extra First Responders during storms and holidays. The Supervisor of Overhead Lines conducts job walk downs and safety audits. The Business Planning and Support organization manages work performed by contractors.

District management tracks cable repairs through the Mobile Dispatch System and cable replacements through the Work Management System in the process of being replaced. Work Management employs Work Coordinator in each district.

A total of 181 full-time equivalents (FTEs), comprising some 30 crews, were routinely available for distribution line work at the time of our field work. This group included work leaders, line workers, apprentices, and helpers. For substations, the corresponding numbers (Electric Maintenance) were 37 Electric Maintenance electricians and 4 apprentices, 13 relay technicians and 4 apprentices, 13 communication technicians and 4 apprentices, and 7 line workers for automatic line equipment.

5. Distribution Engineering

PHISCo Distribution Engineering, Design, and Reliability organization personnel work from a Mays Landing facilities or at District locations. Distribution engineering responsibilities include feeder outage analyses and reporting, designing corrective maintenance actions, designing distribution reliability improvement programs, designing new and upgraded feeders and business connections, providing feeder design criteria, and conducting feeder short-circuit and protective device coordination. One reliability engineer has responsibility for ACE's automatic sectionalizing and restoration (ASR) program and one for its automatic circuit recloser (ACR) program.

Distribution Engineering has located engineers at each District office - - a Supervising Engineer, a Reliability Engineer, and Field Engineering Technicians. Distribution Engineers and Field Engineering Technicians focus on the engineering and data gathering for new business and reliability work, and on updating the geographic information system (GIS) mapping and asset data system.

The Manager of Distribution Engineering and Design for ACE operates in the organization headed by PHISCo's Vice President of Electric and Gas Operations. The Manager's four reports consist of two Design Managing Engineers (for East and for West ACE), a Manager of Reliability, and an Area Manager who manages outsourced engineering, street lighting, and regulatory tariff design policy.

The reports to the two Distribution Design Managing Engineers include seven Supervising Engineers six Engineers, and twenty-six Field Engineering Technicians performing graphic work and GIS data inputs. The Engineers determine corrective maintenance priorities, and develop correction actions, evaluate customer complaints, conduct feeder short circuit and coordination studies, design large customer work, and conduct power quality investigations.

The Manager of Distribution Reliability (also called Asset Performance) in Mays Landing has a staff of three engineers and a technician who work with the PHI reliability group to produce daily outage logs, participate in daily outage and chief operating officer (PHISCo) calls, correct outage data, and participate in the weekly outage call with reliability, District engineering staffs, first responder supervisors, electric maintenance, and the Operations Control Center. They flag outages involving 100 or more customer interruptions, three or more outages at the same location, and outages with unknown causes. They investigate causes underlying outages and lengthy restoration times. Distribution Engineering personnel attend the daily lockout outage calls to determine the accuracy of outage causes and numbers of customers interrupted, and to determine remediation needs for more significant incidents, such as customers experiencing more than three interruptions in a year and outages affecting large numbers of customers. Management generally requires outage and restoration analyses for outages of at least 100 customers lasting more than four hours.

Distribution Engineering designs fixes for outage causes. Its Staff of 23 Clerks in the four districts takes new business orders, creates work orders, processes time sheets, requests as-built documents, and organizes document retention.

A Central PHISCo Distribution Reliability Group develops and monitors five-year general reliability improvement planning, and focuses on details in its 18-month reliability planning. It submits its work plans to the Work Management group at T-15.

Distribution Engineering tracks causes of all faults, including underground residential distribution (URD) cable faults. ACE used to capture multiple underground cable faults by identifying multiple riser fuse operations. This method required additional research to identify specific cable section faults. Management now identifies specific faulted sections from OMS data, analyzing each faulted cable section, and using a criteria-based approach to evaluate when to replace a URD cable section.

6. *Transmission and Substation (T&S) Operations*

T&S Operations does not have responsibility for transmission system maintenance. Transmission system construction and maintenance work falls under PHISCO's Transmission Engineering organization, with field work generally performed by contractors. ACE distribution line personnel, may, however, address some emergent transmission corrective maintenance activities, when directed.

Directors of T&S Operations and T&S Engineering manage separate groups under the PHISCo Vice President of Transmission and Substations. Before 2018, T&S Engineering and Distribution Engineering operated under the Director of Engineering. The Director of Transmission and Substations (T&S) Operations has responsibility for the execution of preventive and corrective maintenance programs throughout the PHI footprint. An ACE-level Manager of Substations has responsibility for the ACE region.

The direct reports to the Manager of Substations include three key supervisors, responsible for executing work schedules (both capital and maintenance) through the efforts of two or three additional first line supervisors and assigned craft labor. Management divides craft labor into three main disciplines - - Substation Maintenance, Communications, and Relays. Electrical Maintenance field personnel include substation electricians, relay technicians, communication technicians, and automatic line equipment (ACRs and ASRs) specialists. Specialized substation maintenance contractors sometimes conduct selected corrective maintenance and preventive maintenance work at ACE substations and on its protective relays. Responsibility for monitoring conditions and maintenance activities in ACE's substations falls under three Area Maintenance Engineers, who provide technical oversight and guidance for substation maintenance work. Plans exist to increase this staff.

The inspection program for ACE substations includes visual inspections of each substation facility and its equipment on five-week cycles, plus two comprehensive seasonal inspections by Fix-It-Now teams, who also conduct minor repairs. Management has been moving from paper to tablet computer storage of the data. High-priority correction needs identified during inspections produce an immediate P10 or P20 item, generating an automated work order from a supervisor. Lower-priority items identified undergo supervisor review, followed by work-order creation by a T&S Work Planner. The Work Planners and Supervisors track inspection backlogs.

Through the first half of 2017, Electric Maintenance scheduled and executed substation corrective maintenance work, with this role moving then to the T&S Work Management group. Work Management monthly reports items completed, with monthly Electric Maintenance staff meetings offering a forum for sharing completion status.

Management has located at each ACE District, four substation Fix-It-Now electricians for substation items and two for relays. Typical Fix-It-Now activities include substation inspections, repairs, emergency work, and substation switching for System Operations.

The Work Management organization schedules substation preventive maintenance, which Electric Maintenance personnel then perform. A monthly Work Management department report lists preventive maintenance items completed, which then get summarized in the monthly KPI book. Work scheduling follows set maintenance cycles ranging monthly to eight years, based on equipment type and application. iPads and paper document inspection results. Testing routines for electrical results for substation equipment reside in test equipment software or paper form.

Maintenance planners perform all tracking. The monthly Electric Maintenance staff meetings address completion status.

Electric Maintenance personnel perform most substation preventive maintenance activities, with contractors also available where already performing work at the facilities involved. Personnel with the job title "Substation Electrical Test Person" perform electrical testing on transformers and other equipment. They have classroom, on-the-job training, and annual computer-based training. Industry experts are under contract to perform and required reviews of electrical test data. Oil Laboratory Chemists provide software-supported analyses of the oil in ACE substation transformers, breakers, and other equipment.

Relays also require regular maintenance. The T&S Field Operations Group manages Relay Operations for ACE equipment. Its Relay Operations work force (relay technicians) test and maintain protective relays and relay schemes and they support capital work involving upgrades to protective relaying. The Relay Operations organization includes a supervisor and thirteen relay technicians, and a communications supervisor, located at Mays Landing.

The Relay Supervisor leads relay testing and maintenance. Relay Technicians must pass a four-year apprenticeship and they receive continued training by the Senior Technician. The group also includes seven Automatic Line Equipment line persons trained to set up automated circuit reclosers as part of ACE's Distribution Automation Program (addressed more fully in Chapter VI).

Relay maintenance uses relay test equipment provided by a well-known manufacturer, and Relay Operation has the manufacturer verify that the calibration of each test set is appropriately accurate and traceable to the National Institute of Standards and Technology. ACE relay testing and maintenance schedules rely on NERC requirements calling for four-year maintenance cycles for electromechanical relays and eight-year cycles for microprocessor relays.

While testing relays, the technicians also operate each circuit breaker from each relay. The T&S Work Management Organization manages relay preventive maintenance planning and scheduling. The Relay Operations supervisors evaluate relay test results and take appropriate follow up actions for defective relays. The Relay Supervisor participates in a PJM peer group, helping to keep procedures up to date. Relay Operations management participates in the T&S Operations Incidence Mitigation Peer Group to review the prevention of bus outages. KPIs include bus interruptions.

7. *Engineering*

The Director of T&S Engineering has overall responsibility for transmission system, substation, and protective relay system designs, and for material failure investigations and analyses, technical specifications, material technical evaluations, corrosion assessments, and alternatives assessments. The Director's reports include a Manager of Transmission Reinforcements, a Manager of Transmission and Substation Engineering, a Manager of Equipment Standards, a Manager of Relay and Protection Engineering, and three Engineering Supervisors and two Design Supervisors. Transmission Engineering has responsibility for transmission system technical specifications, transmission equipment failure investigation and analysis, corrosion assessments, and transmission corrective maintenance. The Transmission Reliability group manages the annual fly-by inspection program, the 5-year comprehensive aerial inspection program, and the 10-Year transmission wood pole ground line inspection program. It submits weekly status reports and using SAP-PM software to create CM notifications and orders.

Moving now to substations, a Substation Engineering Manager has responsibility for the ACE and the Delmarva Substation Engineering groups. A Supervisor in each region oversees regional teams of design engineers, project managers, and financial analysts. Substation Engineering manages equipment design criteria, and creates detailed scopes for and executes the technical design and material procurement activities for all projects within the substation fence. Design activities include creating schematics and wiring diagrams, and performing battery sizing, grounding, lightning protection, AC station service, voltage drop, and station yard lighting studies. Substation Engineering also conducts studies to ensure that circuit breakers operate within design criteria. The Civil Engineering group of the T&S organization supports Substation Engineering by performing the technical design for substation foundations and structures and performing structural loading and foundation design calculations.

T&S Engineering's Asset Reliability group develops the Equipment Condition Assessment (ECA) lists for the substation asset life cycle program. It uses ECA asset equipment health assessments (*e.g.*, transformers, circuit breakers, and switches) to recommend equipment replacement, based on condition. Blanket programs with yearly funding address replacement.

Substation Engineering also manages substation equipment maintenance and testing schedules and procedures, based on surveys of equipment specialists. Its T&S Reliability Group monitors inspection, maintenance, and repair work activity performance, based on established triggers. For example, a high number of breaker operations may trigger required maintenance, overhead line inspections may result in pole replacements, and a power factor test of an aging bushing may drive its replacement.

Protection Engineering falls under a separate department within the T&S Engineering organization. The primary purpose of Protection Engineering is to develop circuit and equipment protection and control schemes and conduct engineering studies to ensure that protection devices provide effective fault protection and isolation to minimize the effect of the faults. ACE Protection Engineers work from a Delmarva office near ACE's territory. The manager of protection engineering reports to the Director of T&S Engineering. The Manager has twelve protection engineers, who serve both ACE and Delmarva.

The Protection Engineering group creates, updates, and keeps documentation for substation relay settings across the system, and works with Distribution Engineering to coordinate feeder circuit breaker settings in the substations with protective devices on the feeders. Protection Engineering provides conceptual specifications, but the Substation Design group does the detailed design and drawings. Protection Engineers also support Relay Operations, creating and maintaining settings, analyzing faults, and assisting with investigations of improper relay operations.

One protection engineer, within T&S Operations, commissions protection systems, and oversees contractor-performed transmission relay maintenance.

8. Distribution Standards Organization

The PHI Manager of Distribution Standards oversees inspection and maintenance standards for all of PHI, including ACE, assisted by the Supervisor of Overhead Standards. Individual Program Managers have responsibility for specific inspection programs (Circuit Patrol, Wood Pole, Pad Mount Transformer, and Overhead Equipment). PHISCo's Manager of Distribution Standards, operating under the Director of Distribution Engineering in Technical Services, has responsibility for distribution inspection and maintenance standards, assisted by the Supervisor of Overhead Standards. The Manager participates in the daily morning calls to discuss progress and issues with the inspection programs.

9. Internal Versus Contracted Resources

Management uses internal line crews for new business and for corrective maintenance distribution feeder work, and it uses its Electric Maintenance Electricians for substation corrective and preventive maintenance work. Contractor crews generally work on larger capacity expansion and reliability projects. However, management does assign internal crews to non-traditional work when not fully utilized for maintenance work, or when assignment will provide apprentice training. Internal Electrical Maintenance personnel include substation electricians, relay technicians, communication technicians, and automatic line equipment (ACRs and ASRs) crews. Management supplements the internal crews trained to perform underground repairs and replacements with underground contractors to perform backbone underground work and new service work in some areas. The next table lists the numbers of ACE skilled field employees for feeder, substation, underground, and protective relay maintenance. These numbers include crew leaders, line workers, technicians, and apprentices.

Inspection, Maintenance and Repair Skilled Personnel

Work Group	2013	2014	2015	2016	2017
Overhead Line Inspections	Contractors as required to complete				
Overhead and URD Cable Repair	162	157	156	184	203
Substation Inspection, Repair, Maintenance	26	33	31	35	34
Underground Maintenance, Repair	33	29	26	27	25
Relay Maintenance	13	13	13	15	14
Totals	234	232	226	261	276

ACE bargaining unit agreements do not impede the use of line crew or substation electrician work locations within the ACE territory, or that so restrict use of line or substation contractors. Management uses inspection contractors to conduct overhead line, ground line pole, and pad mount transformer inspection programs, and vegetation management contractors. In-house Electric Maintenance (substation) Electricians conduct substation inspections, but contractors perform infrared inspections.

For line work, management first seeks to fully schedule all internal crews on maintenance and construction work, then assigning additional distribution feeder work to contractors. Smaller customer-service work orders go first to internal crews. Management occasionally uses specialized substation maintenance contractors to conduct selected corrective maintenance and preventive maintenance work in substations and on protective relays.

About 180 contractor line persons typically work on the ACE system during the construction season. Line contractors perform transmission line work and distribution line work that internal crews do not have the capacity to complete. Management does not plan for maintenance of a specific ratio of contractor to in-house line personnel, instead hires contractors as needed after loading of available internal resources. Management now makes more use of contractor resources than it did four to five years ago.

10. Apprentice Training

Apprentice employees operate in each ACE field departments. Management hires and develops line personnel from other utilities, from contractors, and from its 48-month apprenticeship program (42-month for Electric Maintenance). It requires that line workers and substation apprentices successfully complete for each apprenticeship step a series of home study courses and training modules, including the Safety Manual and Lineman's and Cableman's handbooks. Apprentices must pass all closed-book tests by scores of at least 80 percent to continue in the program, and then continue training until attaining test scores of 100 percent and passing written and practical progression tests. The Training Department records test scores for supervisor review.

ACE assigns apprentices to crews conducting work that maximizes opportunities to work under the guidance of a Journeyman. Apprentices maintain daily records of work experiences, signed off by a Journeyman. The Apprentice is assigned Critical Task Assignments relative to his or her work that must be completed during the 48-month apprentice period before advancing to Journeyman status.

D. O&M Management - - Conclusions

1. The Company's methods for planning, scheduling, and tracking its field work reflect good utility practice.

The new PHISCo Work Management Organization focuses on timely and accurate project preparation, implementation, completions, and performance reporting; which should provide much better work completion performances and accountability.

2. Senior management timely monitors and, using an appropriate range of Key Performance Indicators, effectively evaluates work completions and costs.

Senior Management receives daily information about outages and work activities. Monthly reporting comprehensively measures work completion performance, using both cost and completion metrics.

3. Organization and staffing of the resources applied to ACE operations and maintenance management are appropriate and sufficient.

Staffing of ACE District operations organizations has been sufficient to accomplish planned work, Implementation of the new Distribution Work Management Organization gives District Managers and Supervisors a sound basis for managing crew performance effectively.

4. The Distribution Engineering organization, resources, and processes employed to serve ACE's needs are appropriate.

The Distribution Engineering organization has the staff numbers and skills required to provide appropriate and timely support for ensuring ACE distribution system reliability, and the organization applies effective processes.

5. The transmission organization and resources applied to ACE transmission and substation field operations are appropriate, and they apply good utility practices.

The Company's T&S Operations Organizations management and field resources are appropriate to effectively execute substation inspections, CMs, and PMs. Changes in the substation operations group following the merger with Exelon include the assignment of electric maintenance (substation) electricians to "Fix It Now" teams, who focus on timely addressing high priority corrective maintenance items and to lower priority work as assigned. Another material change has come with implementation of the new Work Management Organization, which allows electric maintenance supervisors to focus more on managing crews and jobs, absent the burden of activity scheduling and work tracking.

6. PHISCo employs effective transmission and substation engineering practices on behalf of ACE.

Engineering staffing and procedures provide appropriate transmission system, substation, and relay scheme design criteria, preventive maintenance program design, life cycle evaluations, and evaluations of corrective and preventive maintenance.

7. The ACE system operates under effective inspection programs.

Distribution Standards employs an appropriate organization and it applies effective distribution inspection programs. Project managers have accountability for performing to budgets and for ensuring that contractors complete inspections timely. Efforts to work down work items and the employment of comprehensive key performance indicators following the Exelon Merger have supported efforts to manage inspection work effectively.

8. Work on the ACE system makes effective use of digital tools and software.

PHISCo has underway a program for updating digital work management and data gathering tools. Management is replacing its existing work management tools (SAP-PM and WMMS) with Exelon's combination of Asset Suite 8 for job orders and Primavera P6 tool for scheduling. ACE first responders and crew leaders have mobile data terminals for work orders and tablet computers with embedded system maps.

9. We found the skills and levels of those who perform ACE field work appropriate.

The numbers of internal skilled employees and the use of qualified contractors provides adequate resources for timely field work completion. Ongoing apprenticeship programs for skilled field employees should provide sufficient skilled resources to replace field employees lost to attrition from retirements.

E. O&M Management - - Recommendations

Liberty has no recommendations in this area. Chapter VI, addressing our focused review of operations, describes improvements identified on the basis of the findings of this and that chapter.

F. System Planning - - Background

We examined the distribution capacity planning organization and processes for identifying and developing ACE capacity expansion projects to manage peak loads, including project cost estimation, prioritization, and approval. We also examined the consistency between estimated and final project costs.

Effective distribution system capacity expansion requires a utility to have and operate:

- A capable capacity planning organization, with equipment specification and system design support by distribution and substation equipment and design engineers
- Clearly defined procedures for system capacity planning and for identifying distribution system capacity expansion needs
- Clearly defined and consistent procedures for justifying and approving capital projects
- Clearly defined and consistent procedures for executing capital projects
- Clearly defined and consistent procedures for estimating capital expansion projects costs.

Our discussion of distribution planning in Chapter VI addressed distribution system planning design criteria for maintaining voltage levels, criteria for rating equipment, design criteria for reliability (including improving sectionalizing, "n-1" substation design, and source redundancy), design criteria for providing efficiency, compliance with NESC guidance, and design of distributed energy resources. That review included criteria changes made following the merger with Exelon.

That review found planning and system design criteria clearly defined and their application consistent with N.J.A.C. requirements, National Fire Protection Association NFPA guidelines, was good utility practice, given the nature and extent of the ACE service territory.

Chapter VI also addressed forecasting of ACE peak loads. We found that forecasting methods produced forecasts somewhat lower than peak loads eventually experienced.

Chapter V, which addressed *Capital Allocation*, described more broadly how the long-range planning processes of PHI and Exelon address ACE's circumstances and needs. The review described in that chapter did consider the bottom-up processes first steps, which occur at the local level. This section, however, addresses in more detail the course that ACE-specific projects take from planning through execution.

G. System Planning - - Findings

1. Post-Exelon-Merger Changes

Management revised the PHISCo system planning criteria to align with those of the other Exelon utilities, applying the Exelon Peer Group process. Current practice seeks to minimize customer outages and voltage problems by limiting the number of customers on 12 kV feeders to 2,000 and by segmenting feeders into 500-customer blocks. To prevent outages during substation transformer failures or maintenance, new substations include at least two transformers, thus providing redundancy. Moreover, it considers retrofitting legacy feeders and substations, as conditions, risks, and resources permit.

Capacity expansion for ACE now operates under Exelon's Materials and Service Procurement Procedure, whose objectives include:

- Identifying and anticipating material and service needs
- Obtaining competitive pricing
- Reducing total cost of ownership
- Providing contractors a level playing field
- Addressing market conditions
- Improving quality
- Mitigating supplier risk
- Providing an Exelon-wide perspective
- Supporting a diverse contractor base
- Shortening lead and cycle times
- Improving the scheduling process
- Promoting supply chain reliability
- Developing positive business partner and contractor relationships.

2. *Distribution Capacity Planning Organization*

The Distribution Capacity Planning department produces ACE distribution feeder and substation peak load forecasts, and develops high-level solutions to address forecasted failures to meet planning criteria and guidelines. Distribution and Substation Engineering groups evaluate alternative solutions and Design groups provide the necessary drawings. Capacity Planning monitors project work progress and compliance via project status meetings. An ACE Manager of Regional Capacity Planning reports to the PHISCo Manager of Capacity Planning. The ACE manager's reports consist of a General Engineer, two Engineers, and two Associate Engineers, who conduct load-flow and voltage studies under normal and contingency conditions. A Regional Planning Manager for ACE keeps distribution system planning records, databases, and drawings complete and current.

3. *Distribution Planning Process Elements*

A System Planning Group Procedures Manual (dated February 2009) guides ACE system planning, with an October 2016 modification to incorporate the impacts of distributed energy resource (DER) integration. Management expects feeder and substation peak load planning processes to remain stable in the future. Clearly defined, consistent procedures guide assessment of distribution system capacity expansion needs. Company's Distribution Capacity Planning group performs short-term planning studies covering about one-half of the total ACE feeder system each year. It prepares 5- and 10-year feeder and substation capacity expansion plans every year.

The Distribution Capacity Planning organization uses peak load forecasts to determine what distribution capacity expansion projects are needed and when to meet applicable criteria.

Specifically, they identify cases where future peak loads exceed normal ratings of distribution feeders, feeder sections, and substation transformers. They also identify where peak loads will result in less than minimum allowed voltage to customers.
Planners also take account of a number of other factors:

- Past levels of and variations between predicted and actual peak loads on each feeder and each substation transformer
- Already planned changes in feeder configuration and plans for emergency feeder ties for reliability improvement
- Expected load reductions from distributed energy resources
- Impacts of loads from planned new customers.

Their work, performed in conjunction with other engineering personnel, produces a range of high-level solutions for providing relief. The alternatives enter the Project Portfolio Management (PPM) software program for approval and scheduling. Distribution and Substation designers produce final designs for the approved solutions.

Plans undergo regular monitoring, including monthly review of the five-year plan, quarterly management meetings, the annual long-range planning and budgeting process, the capital authorization process, 18-month and quarterly work plans, and capital category management. As Chapter V, describes, the long-range planning process following the merger with Exelon occurs continually.

a. <u>Distribution Project Justification</u>

Capacity Planning Engineers examine and justify proposed load relief projects using a load relief formula provided from a computerized, Project Portfolio Management (PPM) system. The Load Relief formula values the amount of expected overload placed on the system without the candidate project under examination. Modeling considers overloads without and with assuming contemporaneous failure of other related equipment. The system calculates "load at risk" under the conditions examined. For overloads resulting from the contemporaneous failures assumed, the probability that the contemporaneous failure will occur is multiplied by the overload that it would produce. The sum of loads at risk with and without the contemporaneous failure drive the "benefits" of providing load relief. Planners use the system to assign a dollar value to load relief, calculated by applying the dollar value of each MVA at risk, the probability of the contingency (contemporaneous failure), current peak load, average load growth over the next 10 years, normal facility capacity, capacity after a failure, and hours required to restore normal capacity.

Following justification of a project based on consideration of benefits produced versus dollars required to produce it, Exelon's Project Approval Process guides the evaluation of and budgeting for ACE capital distribution capacity expansion projects. The Director of Engineering serves as "Category Manager" and the Vice President of Technical Services acts as "Owner" of proposed distribution line and distribution substation capacity expansion projects.

b. <u>Distribution Project Prioritization and Review</u>

Projects that survive the justification process proceed to analysis of projects in relation to others comprising the total body of potential capital projects under consideration. The PPM system supports consolidation and tracking of distribution capacity expansion project initiation, prioritization, approval, and budgeting. Management uses the system as a “scorecard” that compares potential projects against each other. In making judgments about potential projects, planners also secure information about system needs and other factors from project stakeholders, (*e.g.*, Environmental, Real Estate, Engineering, Operations). This review produces for tentatively selected projects a high-level definition of scope, a description of project justification, an identification of start and need dates, and a cost estimate. Reaching this stage does not reflect a commitment to project funding, but an intermediate step, as the next subsection explains.

c. Distribution Project Authorizations

Clear approval limits exist for capital projects:

- Director of Engineering - - approval of projects up to $500,000
- The Project Review Committee (PRC) - - projects between $500,000 and $5 million, addressed at its monthly meetings
- Asset Investment Committee (AIC) - - review (not approval) of projects over $500,000, following technical reviews of alternatives, business case justifications, and funding requirements provided in a technical report to the Project Review Committee for its consideration
- Project Authorization Review Committee (PARC) - - approval of projects between $5 million and $15 million, addressed at its monthly meetings
- Chair of Project Review Committees (PRC) - - emergency authorizations for projects up to the committee’s limit
- PHI CEO/Risk Management Committee (RMC) - - approval of projects between $15 million and $25 million, addressed at its monthly meetings.

The Exelon Capital Approval (ECAP) Process covers authorization of projects over $25 million:

- Exelon CEO - - approval of projects between $25 million and $50 million, addressed at monthly Exelon Utilities Staff meetings
- Exelon CEO, together with the Exelon Finance and Risk Committee (FRC) and the PHI Board of Directors - - approval of projects between $50 million and $100 million (the Exelon Capital Review committee and the Exelon Projects Evaluation committee provide financial and technical guidance to the approving parties, on an ad hoc basis, for projects greater than $50 million)
- Projects above $100 million require approval by Exelon Board Committees or the full Board.

Approved projects must undergo the Project Authorization Process before release of funds to execute them. An electronic Project Authorization Request (PAR) format tracks capital progress though three phases:

- Phase 1 - - includes preliminary design and engineering work, and an initial total project estimated cost (expected to be within +/- 50 percent of final cost)
- Phase 2 - - includes completion of detailed design, site preparation, equipment ordering, construction bids requests, and a re-estimate (+/- 25 percent of expected final spend)
- Phase 3 - - includes another estimate (+/- 10 percent of expected final spend).

An electronic scope change form controls changes to approved project scopes. Projects require reauthorization when:

- Costs or re-estimates exceed 110 percent of, or $100K more than the authorized amount
- Upon determining that expected benefits fall below 90 percent of those projected
- A significant scope change occurs.

The Director of Engineering monitors progress and spend monthly to determine whether distribution capital projects require reauthorization.

Estimates for feeder projects use unit costs and a compatible-unit base estimating system. An MS Excel-based tool providing a standard template guides substation work estimates. Estimators also have access to a range of cost and productivity databases that offer pricing data. Exelon was rolling out a new estimating tool in late 2018, employing the commercially available software “Hard Dollar.”

4. Distribution Project Management

A central PHISCo organization manages larger ACE capacity expansion project; management of smaller projects resides in the ACE district involved. Centrally-managed projects (generally those above $500,000) fall under the PHISCo Project and Contract Management organization. Competitive procurements produce the contractor resources generally responsible for field work on these projects. Centrally-managed projects proceed under a Project Manager, generally supported by an Assistant, a Cost Controller, a Scheduler, a Construction Manager, and several Field Representatives. Monthly project meetings occur during design and development stages, changing to weekly during the project construction. Primavera P6 software tools (in widespread industry use) track each project through close-out. Work scheduling, under the Work Management Information System, was transitioning to Asset Suite 8 in 2018.

Monthly financial reviews supplement the weekly meetings, supported by monthly financial variance reports, which executive management also receives. Responsibility for issues not resolvable at the meetings transfers from the Manager of Projects to the Director of Project Management. The project management teams monitor contractor performance through work site inspections. A Contract Management organization conducts monthly contractor performance meetings, and follows a structured Corrective Action Program to address any contractor performance issues.

Upon work completion, a formal project closeout (registered in Primavera and the Exelon Financial System) first requires Project Manager review of all invoices for accuracy and a final financial report. Within 12 months after projects of more than $15 million enter service, post-implementation appraisals (PIAs) review and document results versus business case parameters, and provide for lessons-learned analyses.

Moving to ACE District-managed projects, each has an assigned Project Engineer, Work Week Manager, Scheduler, Construction Supervisors, and Senior Contract Coordinators. The approaches and methods used to manage and monitor parallel those of centrally-managed projects, except for closeout, which the Work Scheduler accomplishes after receiving the completed job packets from the Field Supervisor or the Senior Project Coordinator.

5. Sample of Distribution Capacity Expansion Projects

We examined a sample of justifications for ACE load relief (capacity expansion) projects, ranging in size. We found them well structure, documented, and analyzed. The next paragraphs describe the projects' purposes.

The largest set of ACE load relief projects came with construction of the new firm-mode Peermont Substation on Seven Mile Island. It included two 69/12 KV, 56 MVA transformers and four new feeders, rebuilding two feeders, and demolition of the existing substation and the Stone Harbor substation. The primary purpose lay in relieving overload on the existing substation and on the island's more than 50 MVA of load. The project would provide better and faster load transfer capability - - the island's three then existing 12 kV feeders were out of phase with the two 12 KV feeders from the mainland. It would also provide a backup in the event of failure of or maintenance work on one of the transformers. The project would also enable retirement of what the ECA process determined to be a high failure risk for the mainland 69/23 kV Court Substation transformer and the 23 kV submarine cable (also a high maintenance facility) between mainland and island. Failure of the submarine cable would result in the loss of about 10 MVA of load, cause a 46 percent overload on the island, and take four weeks to repair.

We also examined the completed load relief project at the Silver Lake Substation, designed to address rapidly increasing hospital and business loads on the substation's feeders. Management identified establishing a new feeder out of the Silver Lake Substation and reconfiguring the existing feeders as the most cost-effective solution to relieve overloading.

We also reviewed two load relief projects at the Dorothy Substation. Management decided to balance load at the substation by bringing a new feeder out from it and by building a second phase beside an existing single-phase feeder. The phase imbalance on this substation was 32 percent, compared to the maximum 15 percent established by planning criteria.

We also reviewed the replacement of about 5,000 feet of three phase conductors with larger conductors on a feeder from the Beckett Substation. That project sought to relieve a predicted voltage drop of about 15 percent and conductor overload of about 18 percent on the feeder replaced.

Finally, we examined the extension of a phase on a feeder from the Williamstown substation and the transfer of load to relieve a predicted voltage drop of over 7 percent.

6. Distribution and Substation Capital Spending

The next table summarizes ACE RIP-related distribution capacity-related expenditures between 2013 and 2017.

ACE RIP Capacity Expenditures

Year	Amount	Year	Amount
2011	$16,348,407	2015	$5,688,790
2012	$39,936,672	2016	$23,820,454
2013	$48,092,294	2017	$15,964,941
2014	$21,915,463		

We found mixed results in comparing estimated versus actual costs for large projects. Chapter VI, *Focused Operations Review*, which addressed our focused review of operations found that ACE's 2016 and 2017 RIP capacity expansion expenditures ran more than $10 million above budget. As noted, Exelon was moving late in 2018 toward a single, common estimating tool (employing "Hard Dollar") for all its utilities. The next table shows estimated versus actual costs for the substantial ACE capital projects completed in 2016 and 2017, highlighting three with large differences. Note that the variances generally exceeded 10 percent, frequently by significantly more.

Cost Summary - - Large ACE Capital Projects

Project	Completion		Last	Variance	
	Date	Cost	Estimate	Dollars	%
Becket Feeder Reconductoring UDLALM7G7	5/19/2016	$305,217	$500,000	-$194,783	**-39%**
Court-Stone Harbor Peermont Underbuild UDLALPM2	6/19/2016	$1,567,385	$1,394,190	$173,195	**12%**
Winslow Reconductoring UDLALM7W3	4/19/2016	$185,862	$250,000	-$64,138	**-26%**
Dorothy: Feeders UDLAM7P6	6/12/2016	$501,762	$407,024	$94,738	**23%**
High Street Underbuild UDLALM7G6	12/20/2017	$3,458,005	$900,000	$2,558,005	**284%**
High Street Mullica Hill Feeders UDLALMH1	8/28/2017	$3,321,976	$2,436,511	$885,465	**36%**
Peermont Feeder Reconfiguration UDLALPM1	1/23/2017	$7,470,412	$5,960,708	$1,509,704	**25%**
Ship Bottom Feeder Upgrades UDLALM7P4	2/28/2017	$2,860,157	$2,620,000	$240,157	**9%**
Silver Lake New Feeders UDLALM7W10	1/4/2017	$1,150,265	$1,222,400	-$72,135	**-6%**
Swainton-Peermont Underbuild UDLALPM3	8/23/2016	$1,345,439	$1,417,161	-$71,722	**-5%**

Final costs for the three highlighted projects proved substantially higher than even estimates close to completion. Management's explanations for the large increases were:

- High Street Underbuild's $900,000 estimate and $3,458,005 actual cost - - Management reported a project scope increase following the identification of need for additional reconductoring, in lieu of moving poles.
- High Street Mullica Hill Feeders' $2,436,511estimate and $ 3,321,976 final cost - - Management reported a change in distribution getaway feeder design, resulting in higher costs for directional boring out to the street; management also cited increased costs due to schedule acceleration.

- Peermont Feeder's $5,960,708 estimate and $ 7,470,412 final cost - - management reported cost increases due to delay and added scope following stakeholder feedback and higher construction costs.

Turning to substations, automatic sectionalizing and restoration installations have required some upgrades, but capacity expansion and preventing equipment failures have proven the largest drivers of substation capital expenditures. Management performed work on 20 capital-funded substation upgrade projects during the 2013 through 2017, spending about $59 million in that period on them, to address capacity expansion and voltage regulation issues. Their finals costs would eventually total $93 million. The next table shows annual capital expenditures for substation upgrades. Management has also been replacing less effective ACE oil circuit breakers (OCBs) under its OCB Replacement Program. Chapter VI addresses our review of that program.

ACE Substation Upgrade Capital Expenditures

Year	Amount	Year	Amount
2013	$34,665,413	2016	$5,183,462
2014	$12,580,887	2017	$3,014,185
2015	$3,719,780	Total	$59,163,727

Three of these capital projects exceeded $10 million:

- Marven ($19.4 million) - - This project added a third 69/12 kV transformer and a new set of 12 kV switchgear. A new control building will be installed adjacent to the existing control building. The project was intended to reduce a forecasted capacity overload.
- Franklin Township ($13.6 million) - - This project included a 138/12 kV substation, a 138 kV ring bus with positions for two line terminals, one 40/45 MVA transformer position and mobile unit connection point. The work included a control enclosure with relay panels, site security and an aesthetic perimeter wall, a transformer sound wall, and storm water management, including capacity for municipal storm water discharge from existing easements. With Williamstown substation T5 predicted to exceed its normal rating in 2014, the Franklin substation was intended to provide load relief for the Williamstown, Clayton, Landis, and Minotola substations.
- Minotola ($12.8 million) - - This project involved installation of two 138/12 kV, 40 MVA transformers and establishment of a 138 kV ring bus. The project was intended to relieve low voltage at peak loads and high voltage at low loads.

H. System Planning - - Conclusions

10. An appropriate and sufficiently "local" planning organization and engineering support perform planning for ACE facilities.

The organizations are appropriately staffed, structured, and empowered to address the needs of the ACE network. The Distribution Capacity Planning organization works effectively with engineering and design groups to develop solutions to forecasted failures to meet planning criteria, based on forecasted peak loads and load flow and voltage studies.

11. Management has employed clear and consistent means for identifying projects intended to ensure continued reliability.

Management has appropriately developed long-range capacity expansion plans and undertaken well-coordinated efforts to develop effective solutions to address voltage and loading criteria.

12. Thorough justification and estimating processes have been applied to system planning, but room remains for improvement in estimating accuracy. *(See Recommendation #1)*

Management has applied thorough project justification and cost estimation processes and has employed a comprehensive, well-structured project approval process. We found, however, mixed success in estimating accuracy on large projects. We observed the potential for identifying contingencies more effectively, more comprehensively analyzing project scopes, the identification of a more robust range of contingencies and the better identification of project costs.

ACE's 2016 and 2017 RIP capacity expansion spends exceeded budgets by more than $10 million. A new estimating tool for use by all the Exelon utilities will used the commercially available estimating software, "Hard Dollar." Management was customizing it to address its specific work types and populating the tool with its unique pricing data. The new tool will incorporate added reference pricing data.

13. Management has effectively executed capacity expansion projects.

We observed formal project management organizations for ACE's smaller, District-managed projects, and for its large, centrally-managed projects. We found regular monitoring of and response to issues arising with progress, problems, schedule, and costs.

I. System Planning - - Recommendations

1. Conduct an analysis of the causes of estimated-to-actual cost variances on projects experiencing significant variances and validate the ability of the new estimating tool to address them. *(See Conclusion #12)*

Management should review, analyze, identify underlying causes, and recommend corrective actions to address large cost increases from pre-construction estimates for several large capacity expansion projects completed in 2016 and 2017 were substantially less than the final costs. It appears that some contingencies that eventually happened could have been identified and considered in the design of the original project scopes. Management should confirm that its new estimating tool and underlying data provide acceptable accuracy.

J. Smart Grid Planning - - Background

We examined and evaluations of ACE's efforts to deploy Smart Grid capabilities effectively and efficiently for meeting reliability standards.

Utility Smart Grids use advanced monitoring, controls, and communications to improve reliability and system efficiencies. Smart grids may include automatic sectionalizing and restoration schemes, automatic capacitor controls, and remote control of customer air conditioners and heat pumps to reduce system demand. It also includes contemporaneous monitoring of each customer's load, using Smart Meters, so that time of usage billing plans can also be used to reduce system demand.

Liberty tasks are to verify (1) that ACE has a focused approach to identify trends and developments for deploying Smart Grid capabilities to support efficiency, as well as reliability; (2) that the original Smart Grid Pilot program were well identified, scoped, and measured in terms of results and costs; (3) that ACE's approach focuses on clear and comprehensive assessment of costs of Smart Grid deployments in relation to benefits, and that ACE's approach focuses on clear and comprehensive assessment of costs; and (4) that the Smart Grid benefits are clearly and objectively identified, and measured in ways that support valuing them in relation to benefits. Liberty also examined and evaluated some of these task topics in Chapter VI.

K. Smart Grid Planning - - Findings

PHISCo adopted and employs a focused approach to identify trends and developments associated with the deployment of Smart Grid technologies to support ACE efficiency and reliability. Distribution Automation engineers attend technical conferences, work with vendors, and participate in the Exelon Performance Automation Peer Group to discuss distribution automation issues and identify best schemes and practices.

1. Early Efforts to Build Intelligence into the Distribution System

In late 2009, ACE received a U.S. Department of Energy Smart Grid grant which provided matching funds for a Distribution Automation (DA) pilot program. To receive approval for the program, management conducted a comprehensive study and plan identifying its costs and benefits. ACE selected candidate substations and feeders for DA deployment, based on rankings developed by analyzing reliability index performance over the preceding three years. Management budgeted $37.4 million in total, one-half from the DOE award, $13.4 million for Direct Load Control, and $24 million for related fiber optic and broadband wireless communication infrastructure. The program, which ran from 2010 on included: (a) automatic sectionalizing and restoration, (b) capacitor bank automation, (c) dissolved gas analysis (DGA) monitors on substation transformers, and (d) New Jersey Direct Load Control. Initial software logic and communication issues led to an upgrade of feeder and substation data communications, and to an upgrade of remote terminal unit software.

Following the January 23, 2013 Board Order at Docket No. EO 11090543, ACE implemented its on-going Automatic Sectionalizing and Restoration pilot program. Based on the pilot program and past smart grid PHI experience, ACE began installing automatic circuit reclosers (ACRs) to improve sectionalizing and feeder tie capability, and automatic sectionalizing and restoration (ASR) systems. ASRs systems use advanced automatic control, communication, and switching systems to automatically identify and isolate a faulted feeder section and then automatically and quickly restore service to customers served by remaining feeder sections. ACE's intent was to deploy technology that would enhance reliability by speeding the isolation of system trouble spots and developing a coordinated, automated restoration capability. ACR and ASR systems reduce SAIFI and SAIDI and the costs associated with first responder roll outs.

In addition to deploying ACRs and ASR schemes for improving reliability, management has also deployed Smart Grid capacitor control technology to improve electric system efficiency, direct load control of air conditioners and heat pumps to reduce system demand, and monitor automatically dissolved gases in substation transformers to prevent transformer failures.

a. Automatic Sectionalizing and Restoration Schemes

An Automatic Sectionalizing and Restoration (ASR) Schemes system employs:

- Smart, programmable relays in the substation
- Distributed remote terminal units (DRTU) that give the system operator and electronic link to employ the scheme and to monitor equipment status
- Automatic circuit reclosers and automatic switches
- Electronic controllers for each recloser and automatic switch
- Substation control systems that enable monitoring of such field devices and coordination of their opening and closing to isolate faults and restore service to unaffected feeder sections

These schemes also require supporting communication networks. They include wireless mesh radio, broadband wireless, fiber optic, and microwave radio backbone systems. The communication infrastructure can be leveraged for other installations including Advanced Metering Infrastructure.

Experience under a Pepco pilot ASR project completed in 2008 indicated potential reductions of 20 to 50 percent in the frequency and duration of faults on feeder groups incorporating ASR schemes. From 2010 through 2013, ACE pilot program management identified candidate 12 kV feeders with three or more lockouts and tie points to other feeders meeting planning criteria. Management selected eight substations and 27 feeders, serving about 54,000 customers. Plans called for installation of 140 automatic switches and ACRs and upgrading another 24 ACRs to give them communication and control capability, with all to be integrated into ACE's Energy Management System (EMS) via the telecommunication network. Management projected that the its ASR pilot program would provide at least a 22 percent reduction in CIs and CMIs for the feeders in the initial ASR feeder group. Work began in 2010 and ACE had fully activated the equipment and systems involved by the end of 2013's third quarter.

Following the pilot program, management deployed in 2014 (not funded by the DOE grant), ASR schemes on an additional three substations and six feeders, serving about 10,400 customers. The modifications involved installing or modifying 41 ACRs. ACE also determined that 19 other feeders (serving about 29,000 customers) served by substations already ACR enabled by previous deployments, would also benefit from the introduction of ASR technology.

b. Automatic Circuit Reclosers (ACRs)

ACE reported in 2013 a plan to install between 60 and 80 new automatic circuit reclosers each year ACE has been deploying these reclosers as part of automatic sectionalizing and restoration schemes, and on a standalone base. The ACRs provide remote control capacity to limit customer impact from feeder faults, by automatically sectionalizing the problem area downstream from the closest automatic recloser. This equipment reduces the portion of feeders affected by a fault, facilitating faster fault location and service restoration. Added communications provide visibility and control to the OCC Operator for increased system knowledge and more efficient field device switching processes.

These reclosers automatically trip for downstream feeder faults, then reclose once or several times to restore the feeder in cases of a temporary fault (*e.g.*, form a lightning strike), or to allow downstream devices to trip or fuses to blow, if the fault is a sustained one. The ACE Operations Control Center monitors the status of and controls most of these reclosers, using SCADA. Modern ACRs use microprocessors much more effectively than older, hydraulic ones in isolating faults, and coordinating with other feeder protective devices.

c. <u>Capacitor Bank Automation and Control</u>

ACE has deployed switched capacitor banks, supported by smart controllers, a centralized capacitor control program, and its communications networks. This support facilitates visibility and control of the capacitor banks. In 2013, supported by the DOE funding, ACE installed 150 switched capacitor banks that management monitors and controls through the Energy Management System.

ACE has made these deployments to obtain a power factor close to unity at the low voltage side of distribution substation buses. Doing so minimizes reactive power problems, reduces line energy losses, and provides voltage support for transmission system stability. Such deployment also speeds identification of capacitor failures. Management has estimated that these installations reduce energy losses on each feeder by an average of 1.5 percent (amounting to 300,000 kilowatt-hours), and serve to reduce voltage complaints.

d. <u>Dissolved Gas Analysis (DGA) Monitors</u>

Knowledge of the amount and type of combustible gases dissolved in the oil of substation transformers gives management access to primary indicators of latent internal problems. Management periodically samples and analyzes oil from all substation transformers for dissolved combustible gases. However, serious issues can develop in a transformer during the cycle between manual samplings. ACE has installed on its most critical transformers equipment that automatically samples and analyzes the oil daily, sending automated alarms to the system operator when triggered by sampling results. The installations were completed by mid-2013, supported by the DOE funding. Prior thereto, ACE had installed the monitors on its three single-phase 500/230 kV transformers. Management has planned to continue to add them to all new transmission transformers and on existing distribution transformers as needed.

e. <u>New Jersey Direct Load Program</u>

In July 2008, the Board ordered ACE to design a demand response program, Management submitted a plan to install 42,200 controllable devices on central air conditioning and heat pump units. ACE estimated a cost of $16.6 million, with installations planned for completion by mid-2014. Funding of $13.4 million received approval - - with $6.7 million to come from the DOE funding.

2. Ongoing Deployment of Smart Grid Technology

ACE has continued a Distribution Automation Program that seeks to reduce the numbers and the minutes of customer interruptions, which also improve SAIFI and CAIDI. Distribution automation also reduces First Responder and truck roll expenses and associated impacts. We addressed this program in Chapter VI, which describes the results of our focused review of ACE operations. The program continues the deployment of automatic circuit reclosers and automatic sectionalizing and restorations schemes.

The ASR schemes, while more expensive than applying only automatic circuit reclosers, promote reliability better. Faults on a protected group get isolated automatically, with de-energized load not on a faulted feeder section automatically transferred to another feeder in the same group. This "self-healing" operation takes only a few minutes, without intervention but under real time system operator monitoring through SCADA/EMS. These schemes reduce customer outages and they reduce occasions when Distributed Energy Resources (DERs) are forced off line.

As noted, ACE has also continued to employ automatic capacitor controls, using smart grid technologies, to improve electric system efficiency.

The next table summaries recent active participants and peak savings levels under the New Jersey Direct Load Control Program.

MW Load Reductions Due to Direct Load Control

Earlier Year Actuals			Forecasts		
Year	**Participants**	**Savings**	**Year**	**Participants**	**Savings**
2014	45,046	54.37 MW	2018	44,437	Not available
2015	46,449	26.06 MW	2019	43,098	Not available
2016	45,866	55.36 MW	2020	42,338	Not available
2017	45,752	55.22 MW			

3. Analyzing Smart Grid Costs and Benefits

Management determines where and how to deploy distribution automation (ACRs and ASR schemes) on the ACE system largely on the basis of a comparison of costs versus benefits. The approach employed comprehensively assesses those costs. The first level of prioritization focuses on alternative programs, both required and available. Then, within the parameters set by program prioritization, a companion program prioritizes projects within each of the programs. Each year's distribution automation budgets first consider Reliability Improvement Programs required by Board Order and by N.J.A.C. provisions. Prioritization then generally follows the premise of funding those programs that will generate the biggest reliability improvement per dollar spent.

ACE reliability engineers have access to outage data via daily Outage Management System outage reports. The process for identifying, prioritizing, and budgeting feeder and substation projects employs the following factors:

- Historical reliability performance of feeders and other assets
- Material condition
- Projected reliability performance improvement

- Potential impacts and risks of not performing the work.

Management generally evaluates candidate RIP feeder reliability improvement projects through the use of a monetary value assigned to avoided interruption. From a base value of $100 per avoided interruption and $1 per avoided minute of interruption, planners can make adjustments, still applying the general rule that whatever benefit dollar value results, it should exceed likely project costs. We addressed this approach in Chapter VI. The next table shows some examples of how management evaluates and compares project costs to avoided interruptions numbers and minutes.

Examples of Reliability Candidate Evaluations

Remediation Method	Per Mile		Reduction Rate	Customers/ Outage	$/Avoided Interruption
	Costs	Outages			
Trim 60 trees per Mile	$2,400	0.20	80%	150	$100
Install 3 Lightning Arrestors/mile	$4,500	0.10	50%	900	$100
Install 3 Squirrel Guards/mile	$1,500	0.40	75%	50	$100
Replace 1 Span of URD/mile	$10,000	3.00	100%	33	$100

The evaluation does allow for qualitative considerations to supersede dollar valuations. Management may, for example, place chosen projects with lower benefit/cost ratios to address other values, for example, addressing problems that produce multiple interruptions to the same customers.

Prioritization of automatic circuit recloser installations employs historical reliability performance data as the primary factor for prioritizing the feeders on which to install them. Management uses projected reliability improvement versus cost as its primary prioritization criterion, preferring feeders with strong tie points to other feeders. They offer the ability to transfer load without costly conductor replacement work. Management also analyzes the ability to take advantage of previously established communications infrastructure.

By comparison, costs play a larger role in prioritizing automatic sectionalizing and restoration schemes, because they can vary more significantly from feeder to feeder. A feeder selected for recloser deployment can be incorporated into a group considered for an automatic sectionalizing and restoration scheme, if cost effective. Otherwise, new reclosers can be installed as stand-alone devices, while still being remotely controllable. This approach is typically justified when an automatic sectionalizing and restoration enabling scheme would require expensive substation upgrades or conductor replacement on long feeders.

Since 2009, ACE has placed 808 modern reclosers into service. A long feeder with large customer counts can have as many as eight reclosers. ACE operates sixty-one feeders that each serve over 2,500 customers, and 142 ACE feeders are over 50 miles long. As noted earlier, ACE is using reclosers to sectionalize every group of 500 customers. Over the past three years, management has installed 150 new in-line feeder automatic circuit reclosers and 103 new feeder-tie configurations. Fourteen of the standalone installations and 30 of the feeder-tie installations, will form components of upcoming automatic sectionalizing and restoration schemes - - the rest will operate as stand-alone feeder protection devices. In 2017, ACE installed and enabled communications to 91 standalone reclosers. These additions, require work beyond installation, requiring engineers to coordinate the tripping characteristics of conventional feeder fuses, Trip Saver electronic fuses, and circuit breakers.

By the end of 2022, management estimates that ACE will have a total of approximately 150 feeders operating as part of automated sectionalizing and restoration schemes - - an increase of 93 over the current total of 57 feeders. Management has estimated that this number will annually reduce the number of customer interruptions by 46,000 and the total customer minutes of interruption by 4.5 million for the 150 feeders.

4. Advanced Metering Infrastructure

Advanced Metering Infrastructure (AMI) employs Smart Grid technology, with so-called smart meters generating optical pulses based on watt-hour energy use and transmitting the data to collectors, which then digitally transmit that data to a central repository and ultimately to the customer information system, which produces billing calculations. Energy billing, Operations Control Center, and capacity planning personnel can communicate with the AMI system to do many useful things; *e.g.*, determine if meters are energized (especially useful during outages), determine energy usage at specific time periods, and determine peak usage. ACE has not deployed an AMI system. The other PHI and Exelon utilities have mature AMI systems.

L. Smart Grid Planning - - Conclusions

14. Management applies a focused approach in identifying trends and developments for deploying ACE-system Smart Grid capabilities to support operations efficiency and reliability.

ACE’s Smart Grid Pilot program was well identified, scoped, and executed. Management conducted a comprehensive study and plan identifying costs and benefits of the Pilot Smart Grid Program and commenced deploying Smart Grid programs in 2010. Management effectively measured results and costs. We found the explanations of the selection of candidates, plans, costs, and desired reliability benefits sound. Adoption of a Smart Metering program would expand the capabilities to use information effectively in operating the system.

15. Management has conducted appropriate assessments of Smart Grid deployment costs versus benefits.

Formal processes, supported by automated tools, guide the prioritization of ACE RIP and Distribution Automation programs. The processes routinely apply quantification of benefits in a way that permits valuing them against costs, which produces a clear way for comparing alternatives. Management uses appropriate historical reliability data in prioritizing feeders that would benefit from installing automatic circuit reclosers. Management appropriately considers the existence of strong tie points to other feeders - - a condition that supports the creation of load transferring ability without costly conductor replacement work. Prioritization also considers the ability to take advantage of already-installed communications infrastructure.

A flexible approach exists for deciding whether to install stand-alone reclosers versus incorporating them into more complex, expensive automatic sectionalizing and restoration schemes. Deferring such schemes typically happens when extensive substation upgrades or conductor replacement on long feeders would be required.

Deploying automatic circuit reclosers produced significant reliability benefits for ACE. Reliability engineers credit currently installed reclosers with avoiding over 250,000 customer interruptions and over 19 million customer minutes of interruption in 2017 alone. Additional installations are anticipated to provide substantial interruption avoidance benefits as well. Estimates of the benefits of automatic sectionalizing and restoration schemes already installed include over 34,000 customer interruptions and about 2.9 million customer minutes of interruption since their installations.

M. Smart Grid Planning - - Recommendations

Liberty has no recommendations in this area.

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Chapter XVIII: Cyber Security and System Vulnerability

A. Chapter Summary

Exelon manages cybersecurity programs and activities at the Exelon level. It employs a Corporate Information & Security Services (CISS) organization that serves Exelon's operating entities (including PHI and ACE) through a common organization employing common risk and threat identification and management methods and processes, real-time monitoring and methods, and systems for ensuring business continuity when threatened. We examined methods and practices and we observed real-time activities to monitor, identify, and respond to threats and attacks.

Detailed reporting of what we examined and observed could compromise the effectiveness of efforts to mitigate and respond to threats. We found:

- A fully-effective Exelon-wide approach that appropriately addresses needs specific to ACE;
- A well-structured organization robustly staffed with highly skilled personnel
- A comprehensive end-to-end process designed appropriately to identify risks through an informed and timely process, to identify potential sources and methods of "attack," establish effective monitoring of those sources, challenge the adequacy of defenses through mock attacks, identify attacks real time, respond to attacks, recover from successful penetrations, and learn lessons from observed events
- Appropriate employee training and emphasis on awareness, diligence, and care with respect to cybersecurity vulnerabilities
- Sufficient focus on a range of threat sources: outsiders, employees, contractors, and vendors.

Two areas peculiar to cybersecurity, however, warrant special attention. First, demand for skilled cyber resources well exceed supply in the industry, and are expected to do so into the future. Management recognizes the need for retaining key sets of skills and experiences and attracting new resources into the future. We believe that management should supplement those efforts through development of what, for the industry, is an unusually long (10-year) detailed resource planning process. Second, we believe that internal audit planning should give special focus to cyber risks, incorporate fairly frequent examinations of cybersecurity performance, focus on technical issues and operational effectiveness, and apply any outside expertise needed to ensure the application of current industry experience in its outsider reviews of management performance.

Our recommendations do not arise from a finding of gaps in Exelon's approach to and performance of cybersecurity management. Exelon has taken advantage of its large size and scope to create and execute programs and activities that are, in many respects, leading edge. We make those recommendations to ensure that continuing advances keep pace with growing needs and demands. Past success in this area, commendable though it may be, should bring less a sense of comfort and more a recognition of how hard it will continue to be to maintain that success.

B. Background

Exelon manages cyber security on a consolidated basis for its utility operations. We examined the cybersecurity services provided by the CISS organization. Our examination included:

- Governance
- Exelon's approach to cybersecurity
- Cybersecurity risk assessment
- Promoting awareness of cybersecurity risk
- Recruitment and training
- Use of vendors
- Cooperation with government agencies
- Status of complying with BPU cybersecurity order
- Findings of previous cybersecurity audits

In 2016, the BPU adopted new cybersecurity requirements for the state's regulated utilities in BPU Docket No. AO16030196. The requirements were developed by Commission staff with input from the State's utilities, the Federal Bureau of Investigation (FBI) and the New Jersey Office of Homeland Security and Preparedness (NJOHSP). The BPU Order addressed utility adoption and use of a Cyber Security Program that defines and implements organizational oversight, accountabilities, and responsibilities for cyber risk management activities, and that establishes policies, plans, processes, and procedures for identifying and mitigating risk to critical systems to acceptable levels. Utility Cyber Security Programs must meet minimum requirements for:

- Cyber Risk Management
- Situational Awareness
- Incident Reporting
- Response and Recovery
- Security Awareness and Training.

The assets covered in the order include those involved in industrial control systems (ICS) and those that contain Personally Identifiable Information (PII). Incident reporting occurs through the New Jersey Cybersecurity and Communications Integration Cell (NJCICC). NJCICC's role is to promote cybersecurity information sharing, threat analysis, and incident reporting.

Cybersecurity for ACE and all other Exelon affiliates occurs at the enterprise level, exercised centrally on behalf of Exelon's various operations. As a large energy company, Exelon has a commensurately large cybersecurity organization (CISS). The role of cybersecurity is ever-evolving, driven by the changing type, quantity, and threats to which companies are exposed. Exelon's cybersecurity processes and systems have been in place long before the BPU order. The order simply adds a number of New Jersey-specific requirements that must be met. Much of it is related to reporting.

C. Findings

1. Governance

Exelon employs a highly structured organization for cybersecurity. Governance documentation for all aspects of CISS is found in document SY-AC-1, Exelon's Corporate and Information Security Services Policy. The policy lays out a structure assigning roles and responsibilities according to Exelon's Governance, Oversight, Support, Perform (GOSP) format as follows:

- Chief Security Officer (CSO) -- Responsible for governing and providing functional oversight of all security functions across the enterprise with the exception of those delegated in Section 3.2 of SY-AC-1.
- Chief Executive Officer of Exelon Utilities (CEO EU) -- Responsible for functional oversight of physical security functions within Exelon Utilities.
- Chief Nuclear Officer (CNO) -- Responsible for governing and providing functional oversight of all security functions under Exelon Nuclear management as outlined in 3.2.1 of SY-AC-1.
- SVP Transmission Strategy and Compliance -- Responsible for governance and functional oversight of security functions as required by NERC.
- Chief Information Officer (CIO) -- Responsible for line oversight, support and perform for cyber security controls for IT-supported cyber assets.
- Exelon Employees and Contractors -- Complies with security governance to include Exelon's Acceptable Use Policy and other security policies, programs and procedures; reports security concerns and events in a timely manner; and, cooperates with authorized security investigations.
- Business Unit Leadership -- Promotes security controls implementation and sustainment, and the adoption of secure behaviors by personnel across the Business Unit. Business Units are responsible for line oversight, support and perform for cyber security controls for business-supported cyber assets.
- Security Peer Groups -- Working committees established to provide cross functional and business unit representation for the development and implementation of security controls and services.

The CISS Policy is the foundation of cybersecurity policies and practices within Exelon. Attachment 1 of the policy, "Security Program Architecture" describes the 23 programs that are guided by the principles of the Policy. Every one of the programs is associated with specific NIST obligations.

2. Exelon's Approach to Cybersecurity

CISS has [redacted] employees with about half of them assigned to cybersecurity. The other half addresses other functions, including physical security. CISS uses a Security Management System to manage all aspects of both cyber and physical security. For cybersecurity issues, it is designed to ensure compliance with the National Institute of Standards and Technology ("NIST") Cyber Security framework. Exelon's approach employs overlapping "layers" of security. In this manner, multiple process, systems, and applications work in a coordinated manner to arrest cybersecurity threats as they are encountered.

Exelon's security controls employ an eight-step process:

- Asset Management
  1. Identify the types of assets used across Exelon
  2. Categorize the asset types
  3. Prioritize asset categories based upon relative risk
- Governance
  4. Identify security control objectives and requirements applicable to asset category based on risk (i.e., relative impact of a degradation in performance)
  5. Update CISS Policies and Programs to address security control objectives and requirements
- Control Compliance
  6. Verify that proposed security control objectives and requirements can be implemented
  7. Prepare road map and implementation plans to achieve compliance
- Sustainable Model
  8. Finalize CISS Management Model documents
  9. Operationalize Management Model.

The systems and processes that Exelon employs are suitable, sophisticated, and comprehensive in identifying threats and vulnerabilities, planning to mitigate their occurrence, real-time monitoring of attacks and other threats, incident response, recovery from attacks, and application of lessons learned from incidents that have occurred. Notably, however, formal tracking of potential breaches of security did not begin until 2016, when management implemented the current structure within CISS.

With respect to physical security, Exelon's Security Operations Center (ESOC) monitors [redacted] that include offices, power plants, substations, and various other facilities. Alarms are monitored, and the very far fewer numbers of actual intrusions responded to, investigated, analyzed, and, where required, addressed through physical or other changes. Management applies physical security processes based on leading-edge technologies.

Exelon maintains "hot sites" that provide a backup source for continuing key functions in cases of emergency. Management tests the functionality of each site each year to ensure their capability should the need for them arise. Sites have redundant power supply, communications, and HVAC systems to ensure business continuity in the case of disaster to the primary locations.

3. *Cybersecurity Risk Assessment*

Exelon uses a "left of boom/right of boom" approach to cybersecurity, the "boom" being an informal reference to a cybersecurity incident detection. On the left side (before the incident) are measures (programs) associated with identifying threats and protecting assets from those threats. Threats have been classified (and comprehensively documented) in to a suitable broad and comprehensive list of 13 areas. CISS employs a broad range of programs to identify the above-referenced types of attacks, with each operating under detailed guidelines. These programs include, but are not limited to:

- Security Strategy and Planning
- Security Policy Management
- Security Risk Management
- Third-Party Security Requirements
- Intelligence and Threat Analysis
- Physical Security Assessment
- Cyber Asset Inventory and Classification.

Processes specific to cybersecurity are particularly comprehensive, detailed, and specific, addressing 10 major components. Specific protections exist to mitigate the threat of attacks on IT assets, to ensure detection of attacks, to respond to incidents and to manage any "crisis" situations created, and to secure system recovery and business continuity.

Exelon's CISS organization has designed this framework based on NIST provisions, making its approach to identification, protection, detection, response, and recovery aligned with NIST. Management also applies a formal lessons-learned approach to avoid future occurrences, employing a documented "Corrective Action Program."

4. Promoting Awareness of Cybersecurity Risk

Full effectiveness of a cybersecurity program depends on educating all employees, on promoting awareness about the severity of cybersecurity risks, and on regularly instilling acceptance of the criticality of following procedures that foster effective reduction of cybersecurity threats. Management employs a sound strategy and effective tactics in these areas. One example came following a campaign of posting cybersecurity informational placards in building elevator areas. A substantial reduction in certain types of cybersecurity flags/breaches resulted.

Part of awareness is making sure that all employees understand their roles and responsibilities relative to IT resources. Management emphasizes this understanding in regular training required of all employees. Management requires the training of contract employees as well as Exelon staff. CISS management considers the biggest (but not necessarily the most serious) threat related to cybersecurity as coming from people, not systems. This highlights the need to develop a culture of cybersecurity awareness. This culture appears to pervade the organization.

5. Recruiting & Training

Finding and retaining cybersecurity resources has been challenging in recent years. Cybersecurity professionals, in particular, are in great demand. Worse yet, projections of the supply and demand of IT and cybersecurity personnel show a serious shortage of people.

Exelon is acutely aware of the challenge of recruiting talent to staff CISS. In the course of interviewing key CISS management, it was made clear that CISS looked years ahead in terms of planning on and executing the recruitment of professionals. This includes a position by position view of needs for both the short and long term.

Recruitment goes hand in hand with training as new employees and existing employees alike must receive regular training. The amount and type of cyber threats is constantly changing. CISS management expressed that training is a never-ending process. In particular, new entrants to the job market, new college graduates, are typically 1-2 years behind in terms of knowledge of the state of the art tools and processes for battling cyberattacks.

Management stressed its focus on training. Of particular note was the coordinated effort to train and recruit human resources to meet expected needs. CISS management recognized the need to plan far ahead and change the organization to meet the needs of the internal customers. In support of that, since CISS began in 2014, 48 new job descriptions have been developed.

One key, beneficial aspect of Exelon's cybersecurity organization and the entire CISS organization is proximity to Washington, DC. This area is a center for cybersecurity technology, and includes the presence of key government organizations such as the FBI, the Central Intelligence Agency, and the National Security Agency. CISS has employees who have served in all of those organizations in related roles to their CISS roles, with most coming from the FBI. The proximity to DC enables Exelon to successfully recruit former members of these agencies. Additionally, several area universities offer cybersecurity academic programs. Exelon offers tuition and certifications as perks to attract potential hires.

6. Use of Vendors

Exelon's businesses use many contract employees, vendors, and consultants to augment internal employees. Management needs to ensure that its non-employees are held to the same strict standards as its employees on a number of fronts. First, contract employees must receive the same training that Exelon employees do. Second, all non-Exelon people in physical proximity to Exelon or web-based access to IT resources must be held to the highest standards of security.

CISS regularly tests for attacks from all sources, including those from vendors and their assets. CISS has a job classification of "Hunter" assigned to that role. In this manner, all human resources, internal and external, are deemed a cybersecurity risk. CISS clearly expressed their focus on testing third party sources of risk and has and will end relationships with third party companies who cannot comply with required security standards. Third-Party Security Requirements are specifically described in Exelon's SY-AC-PGM15-002 document. It provides standards for third-party risk management including compliance with NIST standards.

7. Cooperation with Government Agencies/Compliance with BPU Security Order

Cybersecurity represents a global problem affecting IT resources across the country and the world. A key element of dealing with cyberattacks is sharing of information on cyberattacks with state-level, federal, and industry-wide organizations. Within New Jersey, Exelon shares information on key cybersecurity issues with NJCICC, which is explicitly required of the 2016 BPU Security Order. Additionally, Exelon participates in DOE's Cybersecurity Risk Information Sharing

Program (CRISP), a program designed to foster sharing of information in a similar manner to NJCICC, but for energy-related organizations.

CRISP looks at the perimeter of Exelon to see incoming threats and compares them to a global database threats and reports that threat to Exelon. There are approximately 28 participants in CRISP, with Exelon being the largest. This is consistent with Exelon's layered approach to cybersecurity as multiple, redundant systems or processes are used to either thwart or share information about cyberattacks.

8. Previous Cybersecurity Audits

Exelon applies formal audit processes for all aspects of its security operations. However, we did not find prior cybersecurity audits especially useful. During 2016 and 2017, CISS conducted a detailed review of the department's control statements and control environment for its cyber and physical security programs. Management believed that continuing, material changes in business needs as new threats emerged made independent reviews difficult to employ effectively. Internal Audit conducted few assessments during this time period. The need for rigorous auditing remains and Exelon should seek to confirm and test its control environment on a frequent basis.

D. Conclusions

1. Exelon employs especially strong Cybersecurity strategies, plans, programs, organizations, resources, systems, and activities (threat identification, mitigation, detection, response, recovery, and lessons learned).

The CISS organization is led and populated by highly experienced personnel who bring a broad range of capabilities. A formal and comprehensive process risk-management process forms the basis for development of programs specifically designed to address risks. Strong technological systems support continuous detection activities, clear and comprehensive response plans and measures exist, and backup systems exist to support business continuity. CISS takes a proactive approach to threat identification, supported by strong efforts to remain aware of developments in the industry and the experience of others in threat identification and incident response.

Exelon is among the country's largest energy and utility enterprises, giving it a rarely matched ability to adopt and employ leading edge approaches and attract top-flight talent. It has done so, in a manner that produces significant benefit for ACE, as a member of a much larger family of companies.

2. Exelon recognizes the importance of, and special cybersecurity risks associated with, using third party contractors and vendors.

Exelon uses outside vendors and contractors in a wide variety of roles throughout the corporation. The CISS organization recognizes that this represents a challenge given that each represents a cybersecurity risk and that each is subject to non-Exelon processes and policies of their own. Exelon made a point to detail their rigorous cybersecurity standards and processes associated with their contract employees and outside vendors.

External resources are subject to the same standards as Exelon FTEs. Contractors are also subject to the same training on technical and policy matters associated with cybersecurity. CISS provided an example of how a vendor was dismissed from working with Exelon upon discovery that the vendor's systems were not up to par with Exelon's needs.

3. **CISS is better-situated than other energy companies to meet its future human resource needs, but the challenges of doing so remain large.** *(See Recommendation #1)*

As the demand for IT professionals, particularly in cybersecurity, increases and potentially outpaces supply, companies face now a significant resource shortage risk - - a risk that appears destined to continue growing for some time. CISS takes this threat very seriously, and undertakes long-term planning for positions to be filled. It incentivizes prospective employees to join Exelon, and states the need to enhance that process. Exelon is fortunate to be geographically located in reasonable proximity to Washington, DC, which provides access to the cybersecurity talent pool associated with the federal government.

While its efforts at resource attraction, development, and retention are strong, however, we believe that the seriousness of the industry-wide resource problem calls for more.

4. **We found a need for better tracking and performance review to monitor results** *(See Recommendation #2)*

Despite what appears to be a well-run, well-managed organization, we did not find collection and use of data by CISS to assess its performance sufficiently strong. As recently as 2016, CISS did not comprehensively capture metrics on threats, identification, protection, or other useful statistics to gauge how the organization is doing to eliminate and remediate threats and attacks.

5. **The recent cybersecurity audit points to the benefits of continuing regular auditing of the area.** *(See Recommendation #3)*

The recent audit of cybersecurity may indicate a trend toward more regular outside examination of cybersecurity performance. We consider it important to ensure that the audit planning process at Exelon continue to produce work in this area on a regular basis. Despite our observations about the strength of CISS management and operations, outside scrutiny remains a critical element of the process of managing cyber risks.

E. Recommendations

1. **Develop a two-phased, 10-year staffing and development plan for cyber security resources.** *(See Conclusion #3)*

We begin by commending CISS's recognition of the need for strong efforts to attract and retain resources. We also acknowledge its substantial efforts to do so. But a concerning set of factors underscore what we feel is a need to provide a long-term (10-year) baseline identification of needs in this area:

- Annual resource planning, headcount control, and O&M budgeting and cost containment processes can have the effect of placing "blinders" on a long-term approach to ensuring adequate resources

- Exelon had underway an examination of the efficiency and effectiveness (often leading to position reductions) of services provided at the consolidated Exelon level to the parent's broad array of operating entities - - adding to the kinds of pressure the annual processes noted above already produce
- CISS has experienced substantial growth in work scope and costs - - making it necessary to support continued growth with more substantial analysis
- Unlike many other areas of operations, this area suffers from particular difficulty in identifying needs it will have to address in the future - - even in the fairly short-term future
- Whatever those needs are, they will have to be met in a market where demand for resources will not only magnify the difficulty of attracting new needed resources, but in retaining those in which Exelon has appropriately made significant investment and who have skills and experience that will remain in high demand.

Turning to the last factors first, some estimates place the number of currently open U.S. cyber security positions at close to 500,000, with a world-wide shortfall of over 3 million possible by 2021. Exelon occupies a strong position in addressing cyber threats, but will, like others, face significant challenges in retaining key skills and adding new ones. Acquiring and retaining resources requires a long-term approach and is becoming increasingly difficult. Moreover, as threats and attacks take new forms, and as systems, tools, and methods (and the resources required to use them) change to address them, resource numbers and skills requirements will change, and in ways not easy to predict or quantify.

This is not to say that management does not already consider and plan for staffing needs. It is also not to say that the resources at issue here should escape focused attention in seeking to optimize the balancing of limited resources among many needs. Exelon needs to take account of unique features of cybersecurity needs in its study of common-service provider efficiency and in its ongoing annual budgeting activities. Even if expenditures have grown in this area or threats have been successfully managed, that does not necessarily imply the organizations involved can do more with less or even the same with the same.

The risks and the rapidly changing environment are sufficient to adopt here what may be an unusually long resource-planning horizon when it comes to human resources. Exelon is in a comparatively strong position now, but it must be recognized that it will have to maintain it, not just as needs grow, but as companies across the country who face significant needs to "up their game" seek out experienced resources.

A detailed plan over at least a 10-year period should specifically address numbers, skills, current gaps and bench strength in detail over the next three to five years. Management should aggressively work to that plan, even, in terms of key capabilities, at the expense of what may appear to be short-term excesses (on a reasonably limited basis). This approach will enhance a focus on the development of skills and experience among current resources, who will continue to have the benefit of making job-change choices in a "sellers' market."

Internal development will support not just filling the seats nominally required, but in responding to inevitable departures at rates that will presumably prove high, given the market. Growth in needs for experienced resources across U.S. business and industry will challenge those, like Exelon, who cultivate high-level and critical skills and experience. This challenge forms the focus of the latter half of the ten-year period we recommend. A longer-range view of succession planning and personnel development is warranted to ensure a sufficient focus on ensuring that inevitable losses (likely on a scale larger than applicable to Exelon's resource needs overall) do not threaten management and performance continuity.

Moreover, the complexity of the risks in the field continues to increase and the methods, systems, and tools for addressing them can also be expected to change and expand. The nature, scope, and size of Exelon's operations require a large organization. Its size gives the enterprise a special capability to develop a strong "bench" for resources required today, as well as the ability to invest in skills in emergent and still-developing areas.

Another important feature of resource planning for the second half of the recommended ten-year period lies in examining how continued change and developments in threat sources and vectors, as well as preventive and responsive measures can affect not just required resource numbers, but also skills. The long-range view we recommend should include broad and open-ended thinking that considers a robust range of future conditions, circumstances, methods, and requirements. Those scenarios may not substantially drive immediate and intermediate organization, staffing, systems, tools, and other determinants of success. Nevertheless, a wide-ranging vision of how the future may develop is important in ensuring that management remains sufficiently with and ahead of change to ensure that its organization remains well structured, that its senior members continue development of their knowledge of emerging issues, and that potential long-range resource demands they will need to meet in a competitive arena are understood.

We found Exelon a leader in the field in important respects. The merger with PHI has placed ACE into a particularly robust environment with respect to cyber security. Exelon has become such a leader through significant investment in systems, tools, and particularly people. As conflicting needs for resources occur, as they inevitably will in any energy and utility enterprise, it is natural to see areas that have received such attention to become "targets" for slowing or reduction in expenditures. A long-term resource plan in the fast-moving area of cyber security will provide a useful frame of reference for determining what expenditure changes are truly "affordable."

It is sometimes argued that a long-term plan becomes confining in responding to change, particularly in rapidly moving environments. We take a different view. As change emerges, a long-term plan monitored continuously provides a better means for determining what expected paths continue to serve and which call for alteration.

Promoting efficiency is a major goal of engagements like this management and operations audit. However, measuring what is efficient in a high-risk, rapidly-changing environment is not straightforward. The importance of the network and the sensitivity of the customer information (at ACE, for Exelon, and for the country) makes it essential to ensure that management continues to judge needs, not on the basis of the strong measure of success that has been achieved, but on meeting needs that very likely will continue to grow and change.

2. CISS should launch an initiative to design and implement meaningful, actionable metrics for management to review on a regular basis. *(See Conclusion #4)*

Metrics are useful to show how the environment is changing (e.g., the number of attacks that are attempted per month) and how effective CISS is at thwarting the attacks (e.g., the number of cybersecurity events per month). Other metrics can be designed and implemented to capture response and recovery times. Liberty understands that CISS has just begun capturing and reporting on these metrics. Regular reporting of these metrics, consistent with the strongest regard for confidentiality, should be provided to the NJBPU upon request.

3. Provide for regular external examinations of cybersecurity. *(See Conclusion #4)*

Such examinations should result from the normal audit planning processes employed. Internal Audit should augment as required its internal resources to assist in the risk assessment elements of that planning process, and also employ any outside expertise necessary to ensure the effectiveness of reviews undertaken. These examinations should extend beyond procedural compliance, incorporating clear methods and applying required expertise to examine substantive performance effectiveness. This recommendation does not arise from any observations of performance gaps or deficiencies on our part, but from the belief that the importance and changing nature of the threats involved call for special focus in a fast-changing environment.

Chapter XIX: Clean Energy Table of Contents

Chapter XIX: Clean Energy

A. Chapter Summary

ACE has an important, but circumscribed role in management and operation of New Jersey's Clean Energy programs. A significant government infrastructure exists to perform broader program design, revenue and cost management, and program execution roles. ACE has created an appropriate organization and assigned sufficient resources to the performance of the roles that the state has assigned to it. The ACE website promotes state programs, both directly and indirectly related to clean energy.

ACE's direct Clean Energy roles focus principally on Comfort Partners and Energy Wise Rewards. The former provides for energy savings assessments, energy education and counseling, and no-cost installations for income-eligible households. The latter provides customer incentives for installation of Residential Controllable Smart Thermostats, which can be cycled to reduce demand during peak summer load conditions. The ACE website promotes and adequately explains the thermostat program and benefits, but would better market them by giving more prominence to its discussion of the significant energy savings ACE and the region gains through use of the devices. Company comments on a draft of this report noted that this program is in the process of being shut down per BPU order.

We examined the accounting methods, procedures, and controls associated with the propriety of disbursements under Comfort Partners and the Residential Controllable Smart Thermostat programs. We found them appropriate and our testing found no concerns about them.

B. Background

The New Jersey Clean Energy Program uses funds from the Societal Benefits Charge in the rates of the State's electric and gas utilities to fund programs in energy efficiency and renewable energy technologies. The funds are collected by the utilities for the New Jersey Clean Energy Trust Fund, which is held by the New Jersey Department of the Treasury.

Third-party contractors generally implement the Clean Energy programs. The utilities' role is to collect the funds and remit them to the Department of the Treasury. The utilities are also supposed to manage the low-income Comfort Partners program. Liberty reviewed ACE's participation in various programs and assessed ACE's accounting controls relative to the Program.

C. Findings

1. Energy Efficiency Programs

a. <u>Programs</u>

Management describes the ACE and PHI direct role in energy program design and execution as limited over the past ten years. That role has focused on administering the Comfort Partners and Energy Wise programs for participating ACE customers. The New Jersey Office of Clean Energy runs the Comfort Partners program, which provides for energy savings assessments, energy education and counseling, and no-cost installations for income-eligible households.

The Clean Energy Office manages the processes for selecting contractors, setting the terms and conditions for their provision of services and matching contractors with participating customers. ACE makes payments to the Clean Energy Office as invoiced, using collections under societal benefits charges from customers as the source for funding these payments to the Office. ACE customer representatives receive training to assist them in directing customers to these programs.

ACE was the only New Jersey EDC offering an Energy Wise rewards program at the time of our audit field work. The program provided a $50 inducement for opting into a plan a that permits ACE to cycle participating customers' heating and air conditioning equipment during peak periods.

The OCE also operates a number of other energy-efficient appliance rebates, equipment recycling payments, efficiency information and other efforts, detailed on its webpage. Two newer programs, operated directly by ACE, have arisen under commitments produced as a result of the Exelon merger. ACE must spend $15,000,000 by March 2021 for energy-efficiency programs it directs in its service territory. See Chapter VIII, *Merger Conditions*. These programs must include measures targeting low-income customers and economically challenged towns and cities. ACE directs two programs to meet this commitment: (a) the Residential Quick Home Energy Program for low-income areas, and (b) OPower's Residential Behavior Based program for low income areas and high energy users.

The Residential Quick Home Energy Program has been offered by BGE, Pepco and Delmarva Power, all Exelon operating utilities. It seeks to increase home energy efficiency, producing savings, through a home visit to examine insulation, heating and air cooling system, lighting, appliance-efficiency, and other circumstances lending themselves to "simple ways" to save energy. ACE uses the same contractor who has performed services under the similar BGE , Pepco and Delmarva programs.

OPower (acquired by Oracle in 2016) has provided services to many, including, for example, programs that provide home energy reports to customers, comparing their use to that of neighborhoods, applying usage benchmarks, and customer comparison to reduce energy usage.

b. <u>Program Management</u>

Energy-efficiency program design, management, and operation takes place on a centralized basis for the PHI utilities, including ACE, as it did before the Exelon merger. The function moved from Regulatory Policy and Strategy to Customer Operations (under the PHI COO) five or so years ago. A Manager, Energy Efficiency and Demand Response directs a team of seven. Two analyst-level positions address New Jersey and Delaware part-time, with the work of the two states requiring the effort of about one full-time-equivalent position.

c. <u>Informing Customers</u>

The ACE homepage includes a prominently located "Ways to Save" button. Pressing it takes customers to another page directing customers to four topics that address conservation.

- Energy Wise Rewards - - providing savings opportunities for reducing energy use on "Peak Savings Days" (new enrollments are closed)

- Energy Conservation Plans
- Quick Home Energy Check-Up
- My Account Online Tools.

The website page dedicated to the Energy Wise Rewards program provides reasonably detailed descriptions of how the program works, equipment installation requirements, opt-in/out limits, and how and how often the program is likely to cycle customer equipment. It also describes the $50 sign-up bonus and, if a customer proceeds to the FAQ page, how and how much program participation may save in annual electricity costs. However, reaching information about the level of annual savings requires a number of clicks. The opening page does not cite energy savings, while the patient customer eventually sees information describing savings levels of 10 percent or more for the web programmable thermostats.

The Energy Conservation Plans page provides a number of active links to:

- The U.S. DOE Energy Efficiency and Renewable Energy website, which describes clean and renewable energy systems residential and business systems customers can acquire.
- A Database of State Incentives for Renewables and Efficiency, offered by the North Carolina Clean Energy Technology Center and providing comprehensive information on state, local, utility, and federal incentives promoting renewables and energy efficiency.
- The Home Energy Checkup offered by The Alliance to Save Energy, including a link to "start your home energy audit now."
- A link to the New Jersey Clean Energy Programs site, provided in the context of a reference to the program's offering of opportunities to generate a portion of their electricity with clean energy generation systems.

Clicking the link to the New Jersey Clean Energy Programs site exposes the series of rebates, recycling credits and other information. Notably, one has to progress from the main ACE web page to the Ways to Save Page to the Energy Conservation Plans page and then past it to the Clean Energy Programs site to reach information that tells customers what they can save in terms of dollars and where to go to do so. This long path includes the Comfort Partners program that provides for energy savings assessments, energy education and counseling, and no-cost installations for income-eligible households.

The online tools link explains a tool that customers can use to track and compare use and assess energy-savings practices.

These various links available to customers who begin with the Ways to Save button of the ACE home page allow customers to reach detailed information and to view messages that promote the use of the various tools and programs the links discuss. However, we found the introductory Ways to Save page lacking in drawing customer interest to energy efficiency measures or the savings they may produce. The page begins with the promising statement that, "Atlantic City Electric is committed to helping our customers conserve energy and choose energy efficient products." However, it then proceeds immediately to directing customers through the links described in the preceding list.

d. New State Energy Legislation

A bill signed into law on May 23, 2018 establishes new clean energy and energy efficiency programs and modifies the state's renewable energy portfolio standards (RPS). It directs the BPU to: (a) increase RPS requirements, (b) modify or replace the solar credit program, (c) establish a process for meeting energy storage goals, (d) adopt energy efficiency and demand reduction programs, and (e) adopt community solar and remote net energy metering programs.

2. Proprietary of Disbursements

a. Comfort Partners Revenue and Disbursement of Funds

The SBC included in ACE customer rates provides the source of funds for the Comfort Partners program, a Clean Energy program authorized for funding from the SBC. The SBC also covers other items, such as the Universal Service Fund (USF) and Lifeline programs. Each utility participating in the program has vendors responsible for providing Comfort Partners weatherization support services with all the gas and electric utilities in each service territory.

ACE records SBC revenues through its billing and accounts receivable systems. The BPU's OCE uses TRC Solutions (TRC), a third-party contractor and Fiscal Agent of the BPU, to manage the Comfort Partners program. TRC collects ACE Comfort Partners amounts billed from the SBC related to the Comfort Partners program for ACE. TRC invoices ACE for the net amount, the revenues required for funding the program per the BPU, minus the costs associated with managing the program. The BPU determines the amount to be invoiced to ACE and other utilities from its projected funding for the program. ACE then remits the net amount to the OCE for the Comfort Partners program via wire transfer. Management reported no revenues or costs associated with the Comfort Partners program beyond those received from the customers and the cost of the contractors and ACE internal labor to administer the Comfort Partners program.

ACE remits SBC revenues for the USF program to the BPU USF Trust Fund Account. The BPU redistributes the funds from the USF Trust Fund Account to ACE for crediting of customers' bills. ACE also remits amounts collected for the Lifeline program to the BPU. The BPU then forwards the funds to the NJ Department of Health and Senior Services, which administers the Lifeline programs.

Management segregates Comfort Partners revenues from the other Clean Energy programs on a monthly basis. Management produces a monthly Active Billed Report by bill cycle from its reporting warehouse. This billing system report identifies and captures the Comfort Partners, USF, and Lifeline amounts billed through the SBC to ACE's customers. The report identifies Comfort Partners revenues separately from other SBC billed revenues. The ACE accounting and regulatory personnel work together to ensure that the revenues collected by TRC and disbursed by ACE are specific to the Comfort Partners program.

ACE incurs costs of two types in relation to the Comfort Partners programs. First are vendor (contractors) costs and second are ACE internal labor costs associated with program management. The contractors provide administrative and program development, sales, marketing, call centers and web site support, training, administration of rebates, grants and other direct incentives, inspections and quality control. The contractors invoice ACE for these services. ACE processes contractor invoices through its accounts payable system and pays the contractors. ACE submits its internal labor costs associated with program to the BPU through the Clean Energy Programs Information Management System. These expenses are deducted from the amount collected from the rate payers through the SBC specifically for the Comfort Partners program.

We reviewed and verified revenues and contractor costs from invoices (Regular Monthly Payment Calculation) received from TRC and paid by ACE for three months (March, June and December) in each the following years - - 2015, 2016, and 2017. The revenues and cost amounts shown on the invoices sent to ACE and paid to TRC agree to monthly revenues required to fund the Comfort Partners program and the contractor invoices.

The following table shows Clean Energy Program revenues invoiced by the BPU and received from ACE and the revenues collected from the SBC in customer rates. Monthly differences result from time gaps between BPU funding requests for the program and amounts billed to and collected from customers under the SBC. Accounting and regulatory personnel operating for ACE track and reconcile the differences annually, and include any over or under recovered revenues from prior periods. See Chapter XIV, *Accounting and Property Records*, for additional details.

Clean Energy Program Revenues Invoiced by the BPU

	2015	**2016**	**2017**
BPU Revenues Received from ACE	$31,773,728	$31,717,123	$30,683,657
Clean Energy SBC Billed Revenues	$32,568,825	$31,086,663	$28,906,596
Difference	($795,097)	$630,460	$1,777,061

The following table shows the Clean Energy Program revenues that the BPU requested and received from ACE, the associated Comfort Partners or other program costs (contractors and ACE internal labor costs) and the net amount due to and invoiced by TRC.

Clean Energy Program Revenues Invoiced by TRC

	2015	**2016**	**2017**
BPU Revenues Received from ACE	$31,773,728	$31,717,123	$30,683,657
Comfort Partners Program Costs	$1,837,378	$1,092,559	$1,155,884
Difference	$29,936,350	$30,624,564	$29,527,773

The total SBC revenues billed to and collected from customers for 2015, 2016 and 2017 are $71,784,531, $68,823,420 and $72,063,154, respectively. The amounts include revenues from Comfort Partners (See Table 1- Comfort Partners SBC billed revenues), USF, Lifeline and Uncollectables.

b. <u>Energy Wise Rewards</u>

ACE offers customers a Residential Controllable Smart Thermostat program under its Energy Wise Rewards program. Customers receive from ACE a reward for opting into the program, which results in installation at their premises of a device that cycles central air conditioners on peak summer days. A contractor, Itron, Inc., administers the offering, providing a range of services.

Savings obtained in the PJM market from energy use reduction serve to fund program costs. Participating customers paying nothing. ACE submits annual filings of revenues and costs to the BPU. See Chapter XIV, *Accounting and Property Records*, for additional details.

ACE customers received a $50 initial credit on their bills when opting into the program. These credits totaled $145,050, $7,200 and $8,800 for the years 2015, 2016 and 2017, respectively. We reviewed selected bills for June and July-2015, September, October and November-2016, and June and August-2017. They showed customer receipt of the $50 credit on opt-in. The next table shows costs associated with the program.

Energy Wise Rewards Program Costs

	2015	2016	2017
O&M Costs	$1,449,460	$1,230,267	$1,291,827
Installation Costs	$418,126	$67,700	$57,441
$50 Customer Credit	$145,050	$7,200	$8,800
Total	$2,012,636	$1,305,167	$1,358,068

c. Accounting Controls

We found accounting and recording of the program transactions in conformity with GAAP and the regulatory accounting procedures for both the Comfort Partners and Energy Wise Rewards programs. ACE recorded the revenues received from the SBC Comfort Partners program and the initial bonus credit to customer's bills from the Energy Wise Rewards program in operating revenue accounts. Contractor and ACE internal labor costs were recorded in the expense accounts. Revenue and cost tracking occurred through individual project work orders for the Comfort Partners and Energy Wise Rewards programs. Monthly comparisons of revenues and expenses served to highlight any under or over recovery of funds, which produce a regulatory asset or liability (deferral accounting). See Chapter XIV, *Accounting and Property Records*, for additional details.

We reviewed accounting journal entries for the Clean Energy and Energy Wise Rewards programs. The review of Comfort Partners collections and disbursements sought to ensure that revenues collected by TRC and program costs agreed to invoices submitted by TRC and recorded in company books. We reviewed journal entries for the months of March, June and December for the years 2015, 2016 and 2017. The revenue accounting personnel use the Active Billed Accounts Report, converted from a bill cycle format to a calendar month basis, for preparing journal entries and recording the transaction on the books of the company

We reviewed with accounting and regulatory personnel the accounting controls applied to ensure that collections and disbursement transactions for the two programs complied with GAAP and regulatory accounting rules. The same accounting controls generally used were also applied with respect to transactions for the two programs reviewed here. See IX, *Executive Management and Governance*, which addresses internal controls.

ACE makes annual filings for each program. ACE makes quarterly reports for the Energy Wise program to the BPU, providing revenues, expenses, and customer data.

D. Conclusions

1. The operation of New Jersey Clean Energy programs gives a limited role to the state's utilities; ACE has provided effectively for the performance of that role.

Clear accountability and responsibility have been assigned to regulatory personnel at PHISCo and resources have been assigned to execution of ACE's role.

2. ACE provides customers with information about the programs and offerings available, but not as prominently and easily traceable as it could. *(See Recommendation #1)*

One can find a substantial amount of information about various energy options through a fairly direct set of "clicks," beginning from the homepage of the ACE website. It also describes the $50 sign-up bonus and, if a customer proceeds to the FAQ page, how and how much program participation may save in annual electricity costs. However, reaching information about the level of annual savings requires a number of clicks. The opening page does not cite energy savings, while the patient customer eventually sees information describing savings levels of 10 percent or more.

With respect to the Residential Controllable Smart Thermostat program, a fair degree of persistence is required. "Selling" the program's benefits (*i.e.*, promoting customer interest in participation) should give more prominence to the energy savings levels involved - - perhaps as strong an incentive as the $50 inducements.

However, with winding down of the program as reported in Company comments on a draft of this report, no change is in order.

3. Appropriate processes address billing, revenue collection, and funds disbursement for Comfort Partners transaction.

ACE records the revenues billed to customers from the SBC through its billing and accounts receivable systems. Our testing disclosed no areas of concern. Management adequately segregates Comfort Partners revenues from the other Clean Energy programs monthly, provides sufficient monthly reporting. Accounting and regulatory personnel work together to ensure that the revenues collected by TRC and disbursed by ACE are specific to the Comfort Partners program.

4. Adequate accounting controls address the Comfort Partners and Energy Wise Rewards programs.

The accounting and recording of the program transactions conform to GAAP and the regulatory accounting procedures for the Comfort Partners and Energy Wise Rewards programs. The revenues received from the SBC Comfort Partners program and the initial bonus credit to customer's bills from the Energy Wise Rewards program, are recorded in the operating revenue accounts. The contractors and ACE internal labor costs are recorded in the expense accounts. The revenues and costs are tracked by individual project work orders for the Comfort Partners and Energy Wise Rewards programs. On a monthly basis, the revenues are compared to the expenses to determine whether there is an under or over recovery of funds.

E. Recommendations

We have no recommendations with respect to Clean Energy, given the reported closing out of the Residential Controllable Smart Thermostat program.

Chapter XX: Contractor Performance - - Mark-Outs and Services Table of Contents

Chapter XX: Contractor Performance - - Mark-Outs & Services

A. Chapter Summary

ACE uses contracted resources to perform distribution system activities associated with underground locating (mark-outs) and line and service installation and replacement. ACE contracts all underground locating outside substation boundaries to two contractors selected competitively. Bringing underground damage prevention into the PHISCo Claims organization follows the Exelon approach of consolidating skills and responsibilities for both investigation of incidents and their prevention.

Despite increases in numbers of requests for mark-outs, performance has improved since 2014, with the number of damages per locate request declining each year. However, not everyone uses the New Jersey One Call ("NJ1C") notification system, which has adverse consequences for ACE. Nearly a quarter of third-party damages occurrences were not preceded by a mark-out request. This number underscores the importance of support for expanding use of the notification system.

Contractor resources working on the ACE system during the construction season number approximately 130 people. Contractors perform about $30 million in distribution work on ACE's system annually, under the management of PHISCo resources. Contracts are let according to an appropriate set of procedures, and adequate processes govern the management and oversight of contractor work. A comprehensive set of metrics show effective performance by contract resources.

B. Background

Utilities can use contractors effectively to provide a short-term supplement to company resources for handling seasonal peak loads of activity and for making effective use of specialized skills and services not required on an ongoing basis. Thus, utilities use a mix of contractors and company resources to achieve economies, especially in field-construction work. Utilities do need to ensure, however, that contractors adhere to company engineering, design, construction, and asset management standards and procedures, and adhere to established safety practices. Management needs to manage contractors, just as they manage their own personnel, to ensure quality and quantity of work. Effective management requires that company supervisors of contractors consistently operate under well-defined responsibilities and processes, using sufficient supporting tools, to make their oversight fully effective in securing expected quality, value, and safety.

Chapter VI, *Focused Operations Review* and XVII, *Distribution Operations Management*, address ACE network operations more generally, including contractor use and management. We focus here on the use of contractors on the ACE system to accomplish distribution work in two specific areas:

- Underground locating (mark-out)
- Line and Service Installation and Replacement.

C. Findings

1. Underground Locating

The NJ1C program has helped utilities avoid service interruptions that would result from excavation damage. NJ1C operates as a state-regulated, non-profit organization comprised of public utilities and municipalities in the State. The NJ1C Center functions as a one-call notification system that provides excavators and the general public with the ability to notify owners of underground facilities before proposed excavation. NJ1C handles both routine and emergency calls.

ACE employees have responsibility for all mark outs within its substations, and contractors have responsibility for all mark outs for everything outside the substation fence. ACE relies on two locate contractors to mark its underground facilities:

- Atlantic Infra Trac for ACE's eastern service territory
- UtiliQuest for the western service territory.

Contracts with each contractor followed a formal Request for Proposal process conducted by the Strategic Sourcing Department. Priority factors in the selection included contractor: (a) embodiment of safety as a core business value, and (b) use of comprehensive internal training programs and quality assurance. The contracts provide for flat rates per locate. The Contract Management group manages the contracts, and tracks contractor performance under the contracts (using monthly Key Performance Indicators ("KPIs")).

Chapter XXI, *Support Services*, discusses the consolidation of a Damage Prevention group in Claims to combine under common management investigation of damage incidents, quality assurance audits, and promotion and education of the public to reduce damage incidents in the future. Management plans to expand the current staff of 5 by 7 to 12 investigators/specialists to oversee locating operations and contractors.

Management has also adopted additional reporting, which includes a tracking form to identify focus areas for audits and additional training and Daily Check-in Reports from the contractors. Following the Exelon merger, management has enhanced the use of KPIs to track underground locating performance monthly, including Dig-in Rate and Electric Underground Damages. A PHI Monthly Performance Summary Book measures actual progress against established targets, and identifies corrective actions designed to close identified gaps.

Before creation of a Damage Prevention group, PHISCo claims investigators performed damage monitoring. The Damage Prevention group plans to add routine field audits of contractor activities. With this change, contractors will no longer be the only ones conducting their own audits. Audit results from 2017 show 11 percent unsatisfactory performance by UtiliQuest and 0 percent by Atlantic Infra Trac. Adding the audits by the Damage Prevention group will strengthen contractor performance management by adding an independent source of examination.

UtiliQuest 2017 Self-Audits

UtiliQuest	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	YTD
Total Locates	3,972	3,710	5,913	5,722	5,871	4,983	7,060	6,387	5,541	6,334	5,694	4,496	**65,683**
Audits Performed									21	50	61	68	**200**
Audits Planned (1%)	40	37	59	57	59	50	71	64	56	64	57	45	**658**
% Tickets Audited	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.38%	0.79%	1.07%		**0.30%**
# Unsatisfactory	0	0	0	0	0	0	0	0	3	10	5	4	**22**
% Satisfactory	0%	0%	0%	0%	0%	0%	0%	0%	86%	80%	92%	94%	**89%**

Atlantic InfraTrac 2017 Self-Audits

Atlantic InfraTrac	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	YTD
Total Locates	6,068	6,575	8,325	7,804	7,924	7,464	5,709	6,606	6,787	6,928	5,844	-	**76,034**
Audits Performed	72	55	7	53	76	59	65	71	71	75	70	-	**674**
Audits Planned (1%)	61	66	83	78	79	75	57	66	68	69	58	-	**760**
% Tickets Audited	1.19%	0.84%	0.08%	0.68%	0.96%	0.79%	1.14%	1.07%	1.05%	1.08%	1.20%		**0.89%**
# Unsatisfactory	0	0	0	0	0	0	0	0	0	0	0	0	**0**
% Satisfactory	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%		**100%**

The next table shows that ACE received more than 150,000 requests in 2017 to locate its underground cable, an increase of 11 percent from 2016.

ACE Locate Requests

Item	2013	2014	2015	2016	2017
Requests for Mark Out	104,185	104,182	116,934	136,073	150,949
Damaged Facilities	70	99	104	100	108

To help promote the NJ1C system, ACE has been an active member of the NJ Common Ground Alliance since its inception in 2005, and has served as Chair of the Electric Stakeholder group as well as Board Chair. ACE has also been an active participant of the annual Excavator Damage Prevention Training Seminars held throughout the State since 2011. The Company co-hosts and facilitates three events annually. ACE employees also attend various community events throughout its service territory to promote safe underground excavation.

ACE's underground locating operation and maintenance costs, have decreased by 17 percent since 2013, as the next table summarizes.

Underground Locating Costs

Year	Total $	Locates (annually)	$/Locate
2013	$1,152,082	104,185	$11.06
2014	$991,351	104,182	$9.52
2015	$1,010,511	116,934	$8.64
2016	$1,373,000	136,073	$10.09
2017	$1,384,000	150,949	$9.17

2. Line and Service Installation and Replacement

Proper supervision and management of construction resources is an essential element in controlling the cost of new facilities, rebuilding projects, and major maintenance activities. We reviewed the procedures, practices, reporting, and management methods regarding the assurance that its contractors are timely installing and replacing lines and services in accordance with construction standards.

The Manager of Business Planning and Support provides oversight and governance on all distribution projects and direct award work for all Contractors of Choice (COC) contractors. The manager develops and conducts short-term and long-range business planning, with particular analytical support on budget and budget challenges. This position supports and implements Operations' strategic plans for Training, Safety, and Budget in order to improve performance.

A Senior Business Coordinator plans, directs, and coordinates the activities of contracting crews engaged in the operation and maintenance of distribution lines and serves as a project manager of contractor scope, schedule and budget for the ACE Business Planning and Support group. The coordinator also manages resources in a manner that ensures the safe, efficient, and timely completion of work with high regard for customer satisfaction in accordance with strategic initiatives. This position requires 24-hour call responsibility and varied work schedules as required by business needs.

Three-year wage agreements with COC establish hourly, unit, and overtime rates. Each COC has a different rate. Internal performance standards measure how the COC perform against the requirements with future contracts awarded based upon these assessments.

ACE generally follows the guidelines shown in the following table, detailed in the "Contractor of Choice Award Procedure," when selecting line contractors. COC, "EOC" means Engineer of Choice, and "MWBE" means a minority- or woman-owned business.

Line Contractor Award Guidelines

Award Value	Process Owner	Action	Bidders
Less than $50K or up to$500k Unit Priced	Contract Coordinator with Contract Management oversight	Direct Award	Preferred COC/EOC/MWBE
$50K < $250K	Contract Coordinator with Contract Management oversight	Comparative Pricing	Preferred & Alternate COC/EOC/MWBE
$250K - $500K	Contract Management with Supply oversight	Quick Bid	COC/EOC/MWBE
> $500K	Supply	Formal Bid	ALL COC/EOC/MWBE

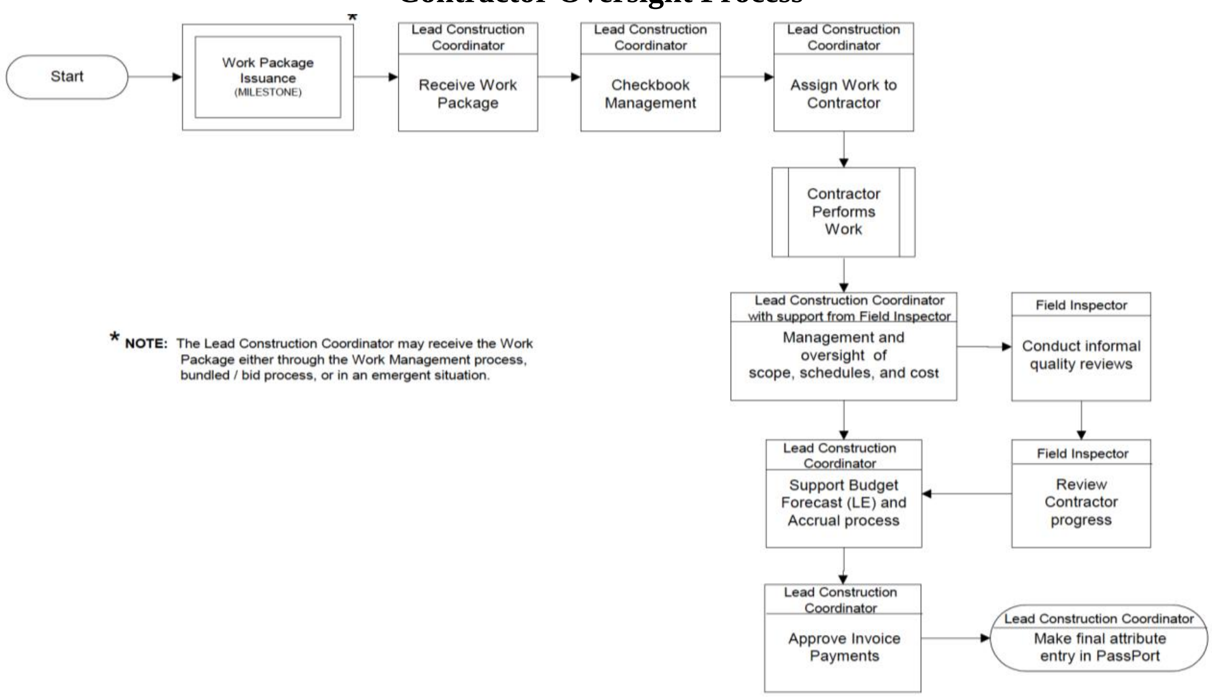
Approximately 130 contractors (measured on a full-time-equivalent basis) work on the ACE system during the construction season. Line contractors perform transmission line and distribution line work that internal crews do not have the capacity to complete. ACE hires contractors as needed. Contractor resource levels are higher now than in 2013.

Field supervisors monitor contractor performance through work management processes that include weekly meetings, managing schedule adherence, and performing walkdowns during the project.

PHISCo employs for ACE "Construction Management IFC Packages Checklist." The responsible engineer provides this statement-of-work-based list with the statement of work scope, to facilitate identification and meeting of pre-qualifications for bidding the work involved. A Senior Contract Coordinator reviews job performance, and performs a post-construction ride out to ensure the work performance in accord with design and to assess the need for any changes to the facilities involved. Proposed changes to contractor work require a change order form that requires prior approval from by the field supervisor and senior contract coordinator. A "Field Supervisor Walkdown Checklist" guides a final review designed to ensure fully and effective completion before the facilities enter service. Contractors must remediate deficiencies at their cost.

Using the Work Management Information System (WMIS), field supervisors follow the following steps shown below in overseeing contractors. PHISCo has adopted the Exelon procedures and processes, and had plans to move to the Asset Suite 8 System, which provides suitable capabilities and ease of use.

Contractor Oversight Process



No specific KPIs regularly measure contractors line installation performance. However, weekly work management process meetings address contractor performance, and monthly performance meetings address all work performed on the PHI utilities' systems.

Management has tracked contractor completion rates for distribution line work since April 2017, but does not track completion rates for underground and secondary and service drop projects.

Budget tracking occurs by project, rather than by contractor. The following table shows contractor completion rates for distribution line work for 2017, beginning with tracking inception in April.

ACE Distribution Line Job Completion Rates

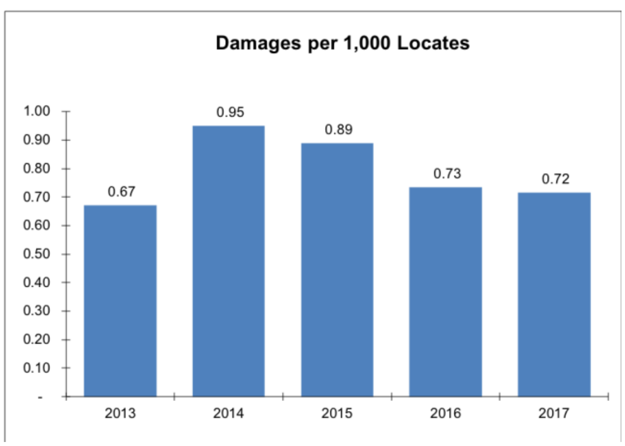
Area	Scheduled	Completed	
		Number	Percent
Bridgeton	64	41	64%
Cape May	161	137	85%
Glassboro	254	152	60%
Pleasantville	61	36	59%
West Creek	0	0	N/A
Winslow	107	67	63%
Total	**647**	**433**	**67%**

Contractor capital spend on distribution work has remained fairly stable, for example, $28.7 million in 2017 and $29.9 million in 2016.

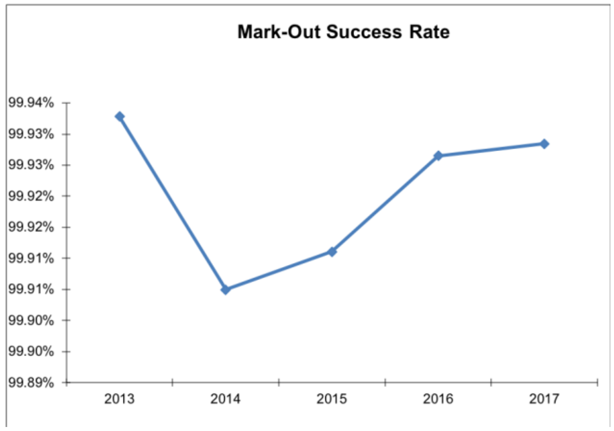
D. Conclusions

1. Management has been effective in controlling third-party damages, but still suffers from the failure of some third parties to use the states notification system. *(See Recommendation #1)*

Over the past five years ACE's mark-out success rate is 99.92 percent. Damages have been declining since 2014. In 2017, ACE had 0.72 damages per 1,000 locates, as the next table summarizes.



While requests for mark outs have been increasing every year, ACE's Mark-out Success Rate has been improving since a 5-year low in 2014. Mark-out Success is defined as the total mark-out requests less damage incidents divided by total number of mark-out requests.



However, not everyone uses the NJ1C notification system—23% of ACE's third-party damages in 2017 did not request a mark-out.

2. PHI's Contract Management group has developed effective approaches to measure and control contractor performance, and has experienced effective results.

Scorecards were developed in 2016 to track key operational metrics and overall performance for all contractors. Metrics tracked on the scorecards include:

- Monthly expenditures
- Workforce effectiveness (hours, and safety incident rates for Occupational Safety and Health Administration, Days Away/Restricted or Transfer Rate, and Human Resources)
- Operational metrics (At-fault rates)
- QA/Safety Inspections (# jobs/tickets audited, % satisfactory)
- Volume of work completed
- On-time completion rates
- Pending claims
- NJ BPU related complaints.

2017 and 2018 year-to-date contractor performance scorecard for underground locating contractors show positive performance from both contractors.

3. Management's tracking of contractor completion rates for distribution line work has been effective, but limits its scope. *(See Recommendation #3)*

Completion rates for the work tracked illustrate the value in tracking completion. That same value can be produced by extending tracking to underground, secondary, and service-drop work.

E. Recommendations

1. Develop and execute measures to continue expansion of third-party use of the New Jersey One Call notification system, emphasizing communications with contractors and customers. *(See Conclusion #2)*

Third-party damage incidents not only cost money, they bring a far more important threat to public safety. Management's combination of incident investigation and damage prevention exhibit a commendable focus on minimizing all forms of incidents involving ACE facilities. Management provides continuing scrutiny to hazards, such as those whose risks the underground locating process mitigates. ACE should continue to emphasize the importance of the NJ1C notification system with contractors and customers, and identify means of ensuring universal understanding of its use and availability. Aggressive goals to reduce incidents not preceded by mark-out requests assist in encouraging creative means of expanding ways to "get the word out" to those whose activities implicate ACE facilities.

2. **Extend the tracking of contractor distribution work completion to additional work to underground, secondary, and service-drop to which contractors regularly and materially contribute.** *(See Conclusion #3)*

Such tracking and analysis of the reasons for variations between planned and effective work will improve management of the work and provide useful information in considering new and extended contracts.

Chapter XXI: Support Services Table of Contents

Chapter XXI: Support Services

A. Background

Our evaluation of support services included consideration of the quality of the support that ACE receives (from both PHISCo and EBSCo) as well as the value received in the context of how much ACE pays for services compared with the costs that other affiliated utility clients of these service companies pay. We evaluated changes in the provision of these services resulting from the Exelon/PHI merger. This chapter reviews the following key functions:

- *Legal Services*
- *Insurance and Claims*
- *Facilities Management*
- *Real Estate*
- *Vehicle Management*
- *Physical Security*
- *Supply Chain*
- *Document Management*
- *Information Technology*

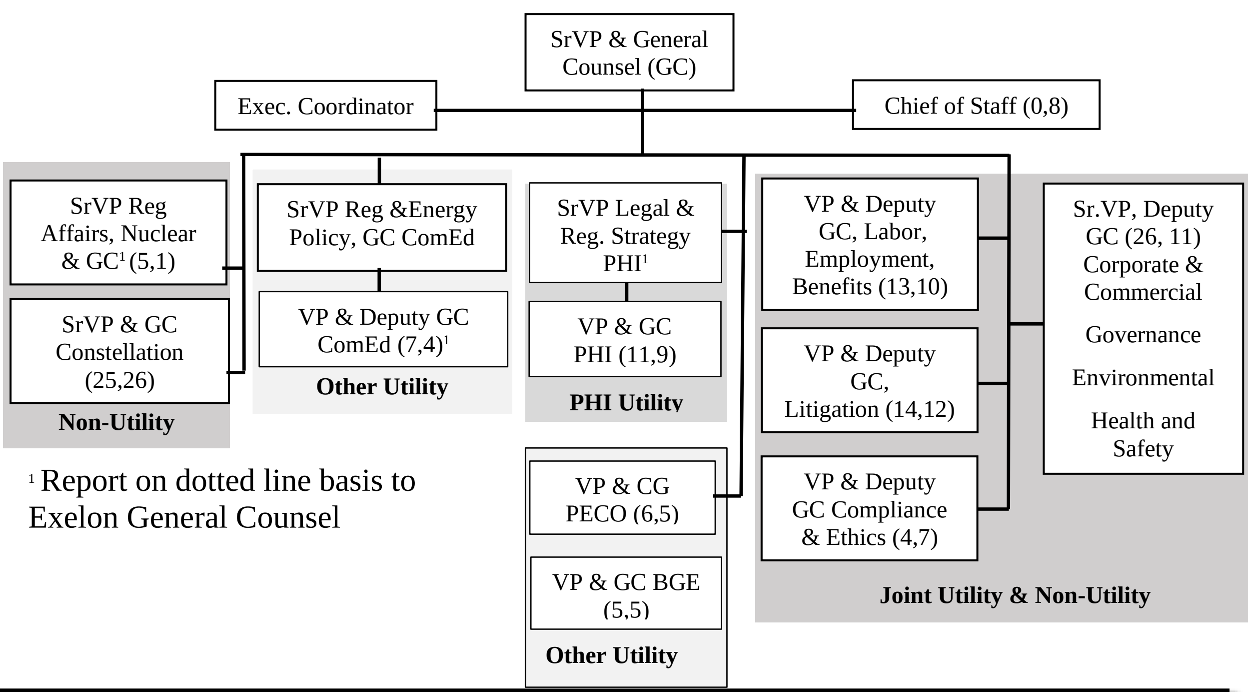
B. Findings

1. *Legal Services*

a. Organization of Legal Services

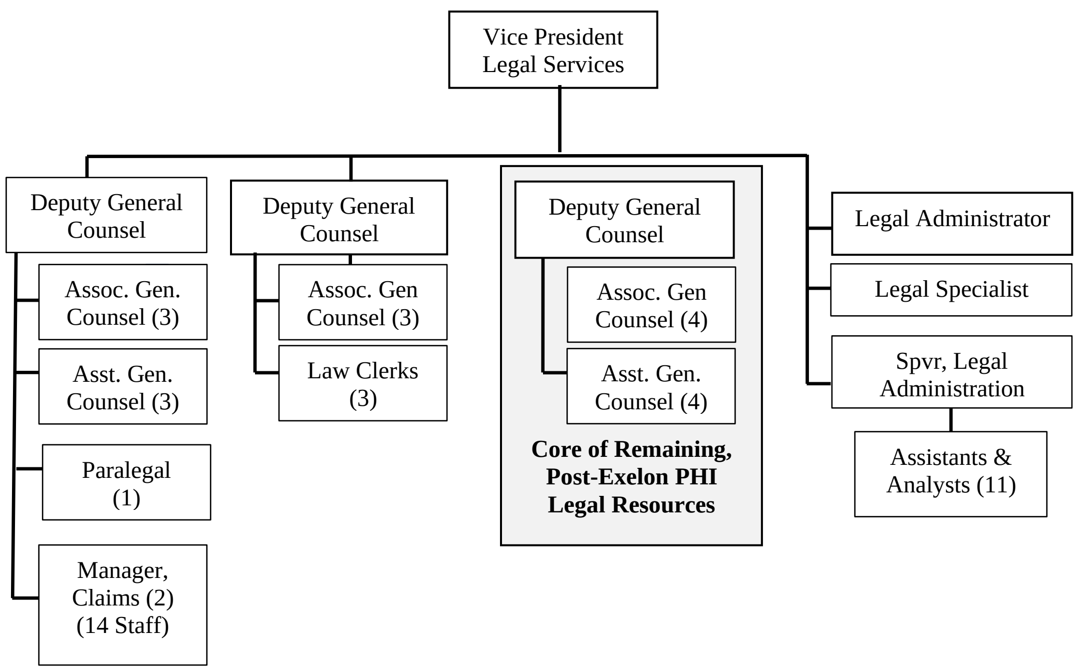
The Exelon merger brought a significantly changed organization structure for the provision of legal services for and related to ACE. Prior to the merger, PHI operated a legal services group centralized at the PHI level. That approach remains for regulatory services (predominantly those related to state and federal utility regulatory authorities, including the BPU). However, other legal services related to PHI and to ACE have been consolidated under Exelon. The next chart shows the current legal services organization at the Exelon level. This organization totals about 225 people. The parenthetical numbers behind the titles show, respectively, attorney and other professional staffing.

Exelon Legal Services Organization



Exelon announced in April 2014 the execution of a definitive agreement to combine with PHI. Work to examine and begin restructuring of resources began before the merger close. However, as the last pre-merger year commenced (January 2016), the PHI legal organization operated, as it had for some time, under the direction of a Vice President, Legal Services. This officer reported to PHI's Executive Vice President & General Counsel, to whom the corporate secretary and the corporate compliance functions also reported. The corporate secretary's authorized positions consisted of two attorneys and six other staff members. The director responsible for NERC compliance had a staff of two. The next chart shows the organization of PHI's Vice President, Legal Services prior to the Exelon combination. The two Deputy General Counsel positions and their reports (shown in left section of the chart) had general responsibility for areas of practice best handled on a PHI-wide basis (*e.g.*, human resources, environmental, tax, and real estate claims, litigation, commercial, and insurance). Those areas of practice and the personnel handling them have moved to the Exelon level labeled as "Joint Utility and Non-Utility" in the preceding chart. However, it was not until the beginning of 2018 that PHI ceased including the personnel involved in PHI budgets.

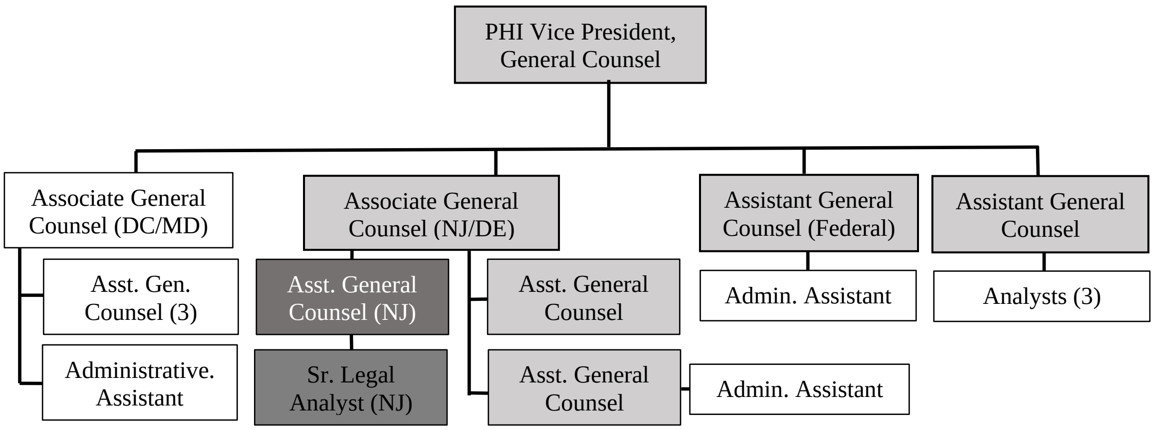
PHI's Pre-Exelon Legal Services Organization



The legal resources remaining at PHISCo serve only the PHI entities, and engage only in utility matters. They operate under a PHI Vice President & General Counsel. This head of PHISCo's legal function reports to a PHISCo Senior Vice President, Legal & Regulatory Strategy. A similar structure exists for the legal functions internal to the other Exelon operating utilities. The PHISCo regulatory function also reports to this senior vice president. The next chart shows the surviving PHISCo legal organization, which remains headed by the person who has served as Deputy General Counsel performing a generally similar pre-Exelon role. The number of lawyer positions has dropped from the 21 shown above to the 12 shown in the following chart illustrating the current

PHI legal organization. Excluding Claims, which has moved from the legal organization to PHI Support Services, paraprofessional and support positions have fallen from 18 to 6.

Current PHI Legal Organization



The attorneys shown in the left-most column work essentially entirely in support of Pepco operations in Maryland and in the District of Columbia. An Associate General Counsel manages the PHI-level legal work performed for ACE and Delmarva. The personnel in the darker shaded boxes under this managing attorney work essentially entirely in support of ACE operations. The two attorneys represented by the lighter shaded boxes to the right of them work predominately in support of Delmarva operations, but on occasion in support of ACE. The two Assistant General Counsel shown in shaded boxes to the right perform functions for all the PHI utilities.

We examined 2018 time charges for attorneys in the lighter-shaded boxes, all of whom do or may perform functions in support of ACE operations. We also examined the 2018 time charges for the Assistant General Counsel (one of the darker-shaded boxes) whose duties concentrate on ACE-related matters.

b. Recent Cost History

The following table summarizes the recent cost history of PHI-level legal services.

PHI-Level Legal Services Costs

(all amounts above the "Total Costs" line are confidential)

Cost Category	2014A	2015A	2016A	2017A	2018B
Direct Costs					
Compensation[1]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Contractors	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Outside Legal Counsel	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Claims	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Materials, Equipment, Other	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Leases, Depreciation, Amortization	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Travel, Training and Meals	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Other Direct Costs	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Salary Loaders[2]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Subtotal Direct & Indirect Costs	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Costs from Others					
IT	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Facility Space	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Fleet Vehicles	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
HR Employee & Payroll Service	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Legal Services	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
BSC Services (not IT)	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Other Crosscharges	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Subtotal Costs From Others	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
TOTAL COSTS	***$29,404***	***$26,301***	***$20,126***	***$15,271***	***$11,588***
PHI Costs Seconded to EBSCo			-$7,340	-$6,430	
EBSCo Billed to PHI			$6,598	$8,654	$5,639
Restatements			$0	$59	$6
Net Distributed to LOBs	***$29,404***	***$26,301***	***$19,384***	***$17,555***	***$17,232***
ACE Share ($)	*$8,267*	*$4,973*	*$3,342*	*$2,820*	Not Yet Available
ACE Share (%)	*28%*	*19%*	*17%*	*16%*	

[1]Includes labor, incentives, stock-based compensation

[2]Benefits, payrolll taxes, pension, OPEB

c. Outside Legal Costs

The next chart shows a steady drop in outside legal costs charged to ACE over recent years. The largest drop occurred prior to the merger with Exelon, but the declining trend continued thereafter.

Trends in Outside Legal Costs Charged to ACE

Subjects	Year				Change	
	2014	**2015**	**2016**	**2017**	**$**	**%**
Litigation, Claims, Insurance	$1,373,009	$906,094	$677,226	$611,676	-$761,333	-55%
Mixed Subjects	$423,691	$371,654	$273,083	$282,136	-$141,555	-33%
Regulatory	$317,870	$392,197	$473,142	$531,178	$213,307	67%
Finance, Taxes	$84,610	$43,331	$129,958	$29,537	-$55,073	-65%
Environmental	$52,946	$116,412	$11,159	$90,655	$37,709	71%
Labor, Employment	$29,373	$64,970	$133,800	$64,901	$35,528	121%
Other	$15,008	$44,724	$1,268	$6,752	-$8,256	-55%
Totals	***$2,296,507***	***$1,939,383***	***$1,699,635***	***$1,616,834***	***-$679,673***	***-30%***

ACE provided a classification of charges by firm, listing subject matters addressed by each. A number of the firm listings used multiple categories. We placed costs under the first subject area listed in ACE's categorization. Services addressing claims, regulatory, and real estate matters appear to have comprised the largest of the multiple-categorized entries. Despite inaccuracies in our charting, arising from ACE's use of multiple categories for some firms, a number of observations appear valid:

- Outside counsel costs borne by ACE dropped by 30 percent from 2014 through 2017
- The only growth area accounting for significant dollars came in the regulatory category
- Reductions in outside costs for litigation, claims and insurance account for essentially all of the total reduction in outside counsel costs over this period
- The subject areas and distribution of costs for outside counsel services appear to reflect generally typical results for utilities operating as part of large holding companies that have made a significant commitment to the use of inside counsel.

We examined a sample of invoices. We reviewed the invoices of four firms who billed work to ACE in 2016 and five who billed in 2017. We selected the firms to cover a range of subject areas. Outside counsel must bill each matter separately and provide detailed supporting information. We reviewed summary information for all of the nearly 400 invoices submitted by the selected firms for 2016 and 2017. The general listings of the matters conformed to the areas management identified as areas of services provided by the firms. We conducted a detailed review of 32 of these invoices, encompassing charges to ACE of over $500,000. The detailed information supported the claimed billing amounts and the descriptions of work showed ACE as the beneficiary of the costs charged to it.

d. Budgeting and Controls

Planning and budgeting takes place under the comprehensive Long Range Planning Process described in Chapter XII. The vice president heading the PHISCo legal function prepares a bottom-up budget each year, for use by PHISCo financial personnel in preparing a comprehensive PHI budget for executive review and approval at PHI and eventually Exelon. Before the change to the Exelon financial systems in 2018, costs for PHISCo lawyers who moved to Exelon remained in PHISCo's legal department budget, explaining many of the charges back and forth between Exelon and PHISCo shown on the earlier chart showing total PHISCo legal costs.

PHISCo changed from Serengeti to Exelon's Team Connect system for outside counsel invoice management in 2017. Both provide industry-leading capabilities for managing external time reporting by matter and for providing an easy-to-use, well-controlled process for managing work by and charging for outside firms. Now using Exelon's performance management systems as well, the PHISCo legal function operates under a process that establishes clear goals and provides an effective basis for planning, measuring, and managing individual performance.

2. Insurance and Claims

a. Insurance Organization

PHISCo managed insurance matters pre-merger with a staff of two working in the Risk Management group. That responsibility moved from PHISCo to EBSCo's Insurance Department following the merger. This department, residing under the Exelon Treasurer, manages insurance Exelon-wide. EBSCo's four-person Insurance Department includes a director and a senior manager. Exelon addresses Risk Management through a separate organization, addressed in Chapter IX. The small organization has not generated substantial costs in running the function.

b. Approach to Risk Retention and Insurance Coverage

Decisions regarding insurance should follow a structured process for identifying the "risk appetite" of the entity involved and for selecting appropriate methods of mitigating those risks outside the range of that appetite. Exelon provides for such an approach for its entities, including PHI/ACE. An Exelon-level Finance Process, the "Self-Insured Retention/Limit Selection Process," describes Exelon's approach, methods, and requirements.

EBSCo's Insurance Department annually evaluates risk tolerance and risk retention and insurance types and coverage amounts, considering trends in the market. Insurance policies renewed or secured have one-year terms. Coverage placement occurs at the Exelon level for all entities, using a master policy, with one principal exception. Insurance of PHI property is placed at its level given a lower tolerance for uninsured risk, as compared with Exelon's acceptable levels. Moreover, some flexibility exists on levels of risk retained among the operating companies. The EBSCo general allocator (a Modified Massachusetts Formula, addressed in Chapter IV, *Cost Allocation Methods*) describes this factor and its use in more detail.

The annual reviews that precede commitments to new one-year policies take place in consultation with the broker with whom the Exelon Insurance Department works. These reviews examine loss experience (the main factor), market conditions, and retention level/rate tradeoffs to make overall determinations about continuation or change in coverage types and amounts. Exelon Risk Management has a central role in defining risk appetite, but it does so from what management has described as a more financially-oriented perspective. The operations perspective comes from the Insurance Department and the operating company leaders with whom they work. These "experts" thus have significant latitude in making judgments about what risk to cover and in what amounts.

Following these reviews, the broker secures quotes from the market for the types and amounts of coverages provisionally planned, and discusses them with EBSCo's Insurance Department. The department decides what to secure. There does not exist substantial documentation of these planning and market surveying activities; they result mostly from discussions in the Department and with the broker.

The next table summarizes changes in coverage provided by third-party insurers. The basic structure and limits have remained the same. Substantial increases in director and officer and cyber coverage comprise the largest areas of change. There has been a wide-scale change in the carriers - - affecting nearly every coverage type.

Insurance Coverage Changes

Coverage Type	Carriers		Coverage Limits	
	2013	Current	2013	Current
Property	5	4	$300 million	
Automobile Liability	1	1	$1 million/accident	
Primary Workers Comp	1	1	Statutory/$1 million employer liability	
Excess Workers Comp	1	1	Statutory/$1 million employer liability	
Primary Directors & Officers	1	1	$35 million	
Excess Directors & Officers	4	22	to $125 million	to $400 million
Excess Liability	3	8	$150 million	??
Professional Liability[1]	1	1	$10 million/claim	--
Punitive Damages	1	1	$35 million/claim	
Primary Fiduciary[2]	1	1	$15 million	$35 million
Excess Fiduciary	3	5	to $60 million	to $100 million
Crime Insurance[3]	1	1	$15 million/loss	$15 million/loss
Excess Crime	0	3	NONE	$35 million
Primary Cyber[4]	1	1	$10 million	$75 million
Excess Cyber	1	1	to $20 million	to $100 million
Aircraft[5]	0	1	NONE	$300 million
Drones[5]	0	1	NONE	$100 million

[1]Coverage for non-utility company PES- - no longer under PHI
[2]Negligent acts, errors omissions in benefit plan administration
[3]Loss from embezzlement, forgery, robbery, securities theft, other business frau
[4]Liability for Cyber breaches
[5]Limits are for liability, include substantial aircraft, nominal drone property

A fast-growing number of American businesses have been turning to cyber insurance and increasing coverage limits as cyber risks from outside intruders have increased and as experience with the nature and extent of resulting harm has expanded. Some estimates place the amount of loss from cyber-crime at $2 trillion by 2019 - - compared to the 2015 estimate of $500 billion. Crime insurance treats, among others, similar risks from internal sources; *e.g.*, trusted employees who misuse electronic and other access. With respect to director and officer (D&O) insurance, American businesses have faced increasing claims frequency, with increases in Federal Securities Class Action litigation cited by some as the main driver.

c. <u>Insurance Claims Experience</u>

We asked about insurable claims related to ACE operations or to groups supporting ACE operations; management responded that there were none in the past four years. Management considers this an expected result, given the tailoring it performs of risk amounts retained, which strongly consider operating experience.

d. <u>Claims Organization</u>

In early 2016, the claims function continued, as had been the case for many years, to report to the PHI legal organization. It had a staff of 16, divided regionally. Two regionally-divided Claims Managers reported to a single Deputy General Counsel. One of the managers had responsibility for claims involving Pepco. The other had similar responsibility for the PHI “North” region - - Delmarva and ACE. The North Claims Manager’s staff consisted of:

- 1 Claims Supervisor
- 1 Senior Claims Adjustor

- 4 Claims Adjustors.

The Claims Manager responsible for Pepco also had a staff of seven, with an additional position open.

Unlike insurance management, claims management did not move to EBSCo following the Exelon merger, but remained a PHISCo function. That function has, however, undergone post-merger changes. It moved in mid-2016 from the PHISCo legal group to Support Services, but remained under the same managing attorney, who also moved to Support Services from the legal group. The claims function then began to report to the PHISCo Vice President, Support Services, who reports to the PHI COO. This Vice President, Support Services directs a number of PHISCo-provided functions serving ACE and the other two PHI utilities; *e.g.*, Security, Environmental, Real Estate, Facilities, Safety, and Fleet.

The changes also included consolidation of the two former claims managers into one position. This consolidated Claims Manager position manages three groups:

- Claims - Third Party, replacing the former PHISCo claims department, and now numbering 13 people
- Claims - Company Damage - - consisting of a staff of five moved over from the former PHI Special Billing Unit
- Claims - Damage Prevention - - a staff of six, formerly spread throughout the PHISCo organization, with the largest group consisting of three persons specializing in underground facilities

The Damage Prevention group has responsibility for incident and field investigations, outreach, and training. The consolidation of this group and its placement under PHISCo Claims exhibit a greater focus brought to prevention following the merger. That focus includes an emphasis on collecting data on and learning from incidents. Management has also since the merger expanded the use of key performance indicators (KPIs) regularly measured and compared among Exelon's utilities. The Third Party group employs 10 such KPIs, the Company Damage group employs four and Damage Prevention employs three. PHI was not capturing data on occurrences regularly: that is a focus of Exelon. Exelon also applies its Peer Group process to claims, whose members from across the Exelon companies meet monthly and in person at least once per quarter.

PHISCo's Claims department also makes use of resources, for example engineers to conduct specialized investigations.

e. Claims Management Costs

The next table summarizes 2017 and 2018 Claims Department costs. It did not exist as a separate budget center earlier, but was part of the PHISCo legal function. Nearly all the increase in costs from 2017 to 2018 came from three sources:

- Increased employee and contractor resource costs involved in the move of company damage management to claims
- Increased emphasis on and move of prevention activities to Claims
- Assignment for the first time in 2018 of damages costs to Claims.

2017/2018 PHISCo Claims Department Costs
(all amounts above the "Total Costs" line are confidential)

Cost Category	2017A	2018B
Direct Costs		
Compensation[1]	[redacted]	[redacted]
Contractors	[redacted]	[redacted]
Damages	[redacted]	[redacted]
Claims	[redacted]	[redacted]
Outside Legal Counsel	[redacted]	[redacted]
Materials, Equipment, Other Direct	[redacted]	[redacted]
Leases, Depreciation, Amortization	[redacted]	[redacted]
Travel, Training and Meals	[redacted]	[redacted]
Salary Loaders[2]	[redacted]	[redacted]
Subtotal Direct & Indirect Costs	[redacted]	[redacted]
Costs from Others		
IT	[redacted]	[redacted]
Facility Space	[redacted]	[redacted]
Fleet Vehicles	[redacted]	[redacted]
HR Employee & Payroll Service	[redacted]	[redacted]
BSC Services (not IT)	[redacted]	[redacted]
Other Cross Charges	[redacted]	[redacted]
Subtotal Costs From Others	[redacted]	[redacted]
TOTAL COSTS	***$3,115***	***$9,465***
Transferred from EBSC		Not Yet Available
Transferred to/from EBSC Net		
Net Distributed to LOBs	***$3,115***	
ACE Share ($)	***956***	
ACE Share (%)	***31%***	

[1]Includes labor, incentives, stock-based compensation
[2]Benefits, payrolll taxes, pension, OPEB

f. <u>Claims Procedures</u>

An Exelon Claims Financial Management program document provides guidance to the Exelon subsidiaries in developing claims processes and procedures responsive to their particular business, legal, and regulatory environments.

An Exelon-level Finance Process Insurance Property Claims Process addresses insured claims involving losses to Exelon entity property. That process makes the Exelon-level Director, Insurance responsible for overseeing the management of insured property loss claims, using the

EBSCo Insurance Team. The process provides clear procedures and comprehensive forms for ensuring proper reporting of insured claims, and care and condition documentation of property affected by them.

The Exelon Vice President and Treasurer works with senior Exelon executive management and the Exelon Risk Management Committee to establish thresholds for self-insurance and risk retention. The Committee must approve significant changes in limits of insurance maintained. The Exelon Director, Insurance then manages risk retention and self-insured levels to thresholds established by the Committee.

3. *Facilities Management*

a. Organization and Processes

A Real Estate and Facilities group in the PHISCo Support Services organization manages real estate and facilities management across all three PHI utilities. Two managers in this group address facilities - - one for ACE and Delmarva combined and one separately for Pepco. A supervisor reporting to the ACE/Delmarva manager has sole responsibility for ACE facility planning and management. This group provides mechanical, electrical, plumbing, hardware, fire protection, and general building maintenance and repair services. The group also manages building systems operations, scheduled preventive maintenance, and construction projects.

The ACE facility supervisor's group consists of eight employees, all now located at Mays Landing although some had been at Carneys Point in the past:

- A project manager
- A business analyst
- Six service persons
    - Three electricians
    - Two HVAC technicians
    - One carpenter.

The manager, supervisor, and project manager engage in facility planning for ACE. The organization also employs a consultant to assist with facility planning, particularly focusing on space management and operating efficiencies. This organization has remained fairly stable in size and composition from 2014 to the present.

The ACE facilities organization has responsibility for the operations and maintenance at the Company-owned facilities at the eight locations shown in the table below. They do the same for four Atlantic Region Customer Care Centers located in leased facilities in Turnersville, Northfield, Atlantic City, and Millville. ACE also leases office space in Trenton to support Government Affairs.

Occupied Company-Owned Facilities in the ACE Region

ACE Sites	Building Square Footage	Site Employee Count	Percent Occupancy
Bridgeton	15,437	33	86%
West Creek	13,944	35	90%
Cape May Court House	23,091	45	78%
Glassboro	17,362	76	89%
Mays Landing Complex	287,456	312	77%
Pleasantville	31,038	86	87%
Winslow	15,652	66	92%
Carneys Point	118,500	383	58%

ACE uses most of these facilities, or PHISCo personnel do, as at Mays Landing. EBSCo leases a small portion of the Mays Landing complex. The facilities organization is working to increase occupancy at the Carneys Point facility, which currently houses customer care functions. The other facilities listed in the table above consist of garage and supply warehouse locations. Two other company-owned buildings do not currently house employees: an "AC Ops" building currently used for storage, and Clementon building under consideration for sale.

The Facilities organization tries to use existing facilities first before considering new facilities, moving people to existing locations rather than finding new locations. If this is not feasible, the facilities group works with leadership to explore other possibilities, and takes input from their consultant, before executing a final plan that has leadership approval. Decisions regarding whether to lease or own new facilities proceed after the performance of detailed financial analysis.

The PHISCo Real Estate and Facilities Organization maintain peer-to-peer relationships with equivalent organizations in the other Exelon utilities. Representatives from each of the utilities meet monthly to discuss issues and share best practices. PHISCo has adopted Exelon's policies and procedures. One provides guidelines facilities planning and another documents facilities management processes. PHISCo had not previously documented its facilities management processes, but PHI facilities managers consider the Exelon versions under which they now operate substantially the same as those they followed pre-merger. Some aspects of the facility planning guidelines remain under development before application to the PHI utilities. For example, the PHISCo facilities organization is collaborating with parallel organizations at Baltimore Gas and Electric Company (BGE) to create a uniform set of branding and building appearance standards for the PHI utilities and BGE.

b. <u>Service Performance Measurements and Benchmarking</u>

Prior to the Exelon merger, PHI used only one KPI to measure PHISCo facilities management performance: Critical Facility Availability. These critical facilities included data rooms, call centers, and the control center. After the merger, the PHISCo facilities groups adopted the six Tier-3 Exelon performance metrics used at all its utilities. Three of these KPI's take measurements at the utility level:

- Percentage of work orders completed on time

- Corrective Maintenance events as a percentage of total work orders
- Percentage of work orders older than 30 days.

The next table shows these measurements for ACE in 2016 and 2017.

Facilities Performance Measurements (Results for ACE)

Measurement	**2016** (Qs 3&4)	**2017**	**2017** (goals)
% work orders completed on time	99%	89%	>85%
% work orders for corrective maintenance	38%	12%	<40%
% work orders older than 30 days	17%	6%	<25%

The PHI Facilities group has utilized the International Facility Management Associate (IFMA) annual benchmarking prior to the Exelon merger.

c. <u>Costs</u>

The next table summarizes the costs of facilities management performed by PHISCo. The chart shows no substantial growth in ACE costs, as its share of the somewhat increasing total PHISCo costs has dropped over recent years. Note that EBSCo does not make charges to PHISCo for facilities management, a function that remains managed and performed substantially as it was before the merger. The 2017 costs seconded to EBSCo reflect charges to entities outside the PHI utilities.

PHI Facilities Management Costs

(all amounts above the "Total Costs" line are confidential)

Cost Category	2014A	2015A	2016A	2017A	2018B
Direct Costs and Salary Loaders					
Compensation[1]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Contractors	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Leases, Depreciation, Amortization	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Utilities and Property Taxes	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Office Supplies and Miscellaneous	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Travel, Training and Meals	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Materials, Equipment, Other	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Salary Loaders[2]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Subtotal Direct & Indirect Costs	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Costs from Others					
IT	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Facility Space	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Fleet Vehicles	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
HR Employee & Payroll Service	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
BSC Services (not IT)	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Other Crosscharges	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Subtotal Costs From Others	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
TOTAL COSTS	*$36,901*	*$38,640*	*$42,167*	*$45,403*	*$47,039*
PHI Costs Seconded to EBSCo				-$2,039	
EBSCo Billed to PHI					
Restatements					-$1,913
Net Distributed to LOBs	*$36,901*	*$38,640*	*$42,167*	*$43,364*	*$45,126*
ACE Share ($)	*$8,349*	*$8,694*	*$8,566*	*$8,809*	Not Yet Available
ACE Share (%)	*23%*	*23%*	*20%*	*19%*	

[1]Includes labor, incentives, stock-based compensation

[2]Benefits, payrolll taxes, pension, OPEB

ACE's all-in O&M costs for facilities management, which include service-company charges, and presumably others, have remained constant in recent years:

- 2015: $10.07 million
- 2016: $9.48 million
- 2017: $10.28 million.

The next chart shows capital costs for those three years.

ACE Facilities Capital Costs

Year	Capital	
	Budget	Actual
2015	$0.91M	$0.88M
2016	$3.05M	$3.09M
2017	$2.63M	$1.00M

The Real Estate and Facilities Manager explained that the significant difference between 2017 budgeted and actual capital expenditures resulted from the deferral of plans for a new service center. The O&M budget includes construction costs, maintenance and on-going expenses (such as gardening and Heating Ventilation and Air Conditioning), salaries/benefits, utility expenses, and taxes. The budget also includes the cost of the facility planning consultant.

4. *Real Estate*

a. Organization and Processes

Management of real estate issues across all three PHI utilities falls under the PHISCo Support Services organization's Real Estate and Facilities group. Two managers in this group address real estate matters, one for ACE and Delmarva combined and one separately for Pepco. Their responsibilities include the acquisition and divestment of property, the leasing and licensing of real estate, and support of the right-of-way permitting process.

The ACE/Delmarva Real Estate Manager's organization contains 12 positions, equally divided between ACE and Delmarva, with one of the six ACE real estate positions unfilled. The five incumbents consisted of:

- Two senior real estate representatives, responsible for planning, appraisals and surveys, creating and maintaining property files both to support permitting and for the acquisition, divestment, leasing, and licensing of real estate.
- Two real estate specialists, who perform the same types of work as the real estate representatives but work mainly on less complex tasks.
- One business analyst, responsible for various analytical tasks, such as maintaining maps and facility leases on a day-to-day basis and tracking compliance.

The number of Real Estate organization positions supporting ACE has remained fairly stable in size and composition from 2014 to the present. PHISCo employees perform most of the real estate support work, with contractors used only for such property maintenance as snow removal and vegetation trimming.

The PHISCo Real Estate and Facilities Organization maintain peer-to-peer relationships with equivalent organizations in the other Exelon utilities. Representatives from each of the utilities meet monthly to discuss issues and share best practices. Since the Exelon merger the real estate groups have adopted Exelon policies and procedures along with documentation, including a process document for land and land rights acquisition. The ACE/Delmarva Real Estate Manager has indicated that the Exelon procedures are not significantly different from those PHISCo had previously used but they are laid out with more rigor in the Exelon documentation than in the previous PHISCo documentation.

b. Service Performance Measurements and Benchmarking

Prior to the Exelon merger, PHISCo did not use any measurements of its real estate operations performance. After the merger, PHISCo adopted a Right of Way Cycle Time measurement, which was used throughout Exelon. This measurement tracked the average number of days to complete the right-of-way documentation packet from the initiation of the process, including both the research time and the acquisition time. The measured values for ACE were 1.4 days for July-December 2016 and 0.15 days for January-August 2017. Exelon replaced this measurement in January 2018 with two measurements that separately track the research and acquisition times:

- Days to Research – the duration in days to research land rights (whether existing or not present)
- Days to Acquire – the duration in days to complete the acquisition new rights (when not present).

The PHISCo real estate group has explained that it does not currently benchmark its real estate processes through external comparisons but does use its peer-to-peer relationships with other Exelon utilities to informally benchmark its work.

c. Costs

The following table shows the budgeted and actual O&M expenses for the real estate group's support of ACE for 2016 and 2017:

Real Estate Budgeted and Actual O&M Expenditures for ACE (Rounded)

Year	O&M Budget	O&M Actual
2016	$912K	$822K
2017	$956K	$829K

The Company has noted that 77 percent of the PHISCo real estate group's internal labor hours are charged to capital projects, but this work is not budgeted through this group. The ACE/Delmarva Real Estate Manager attributes the fact that the O&M actuals have been generally lower than the budgeted amounts during this period to lower than expected compensation and benefits, underrunning of expenses, and management of contractor costs.

5. Vehicle Management

a. Organization and Processes

Prior to the Exelon merger, PHISCo supported ACE vehicle operations through an organization that also provided facilities and document management. After the Exelon merger in 2016, PHISCo split off the vehicle operations support groups into a separate Fleet Management organization, conforming to the overall Exelon support services structure. Two Fleet Operations Manager positions report to the head of the Fleet Management organization, one responsible for ACE and Delmarva maintenance and operations and the other for Pepco. Additionally, the PHISCo Fleet organization contains four other positions that support vehicle operations across all three PHI utilities:

- A senior associate responsible for day-to-day care and maintenance of the fueling facilities. This position currently is providing guidance, in coordination with the Facilities and Real Estate organizations and the project vendor, for a major replacement project at the fueling facilities to replace older underground facilities with new above-ground facilities to reduce the environmental risks.
- A senior analyst responsible for metrics, budget analysis, regulatory and other reporting., and fuel reports.
- A senior specialist, who acts as the lead equipment procurement specialist and specifications writer for both heavy- and light-duty equipment and for off-road equipment.
- A specialist with similar duties, but specializing mainly in light-duty equipment.

ACE supports its vehicles through a total of 16 mechanics at garages in seven locations:

- Bridgeton
- Cape May Courthouse
- Glassboro
- Mays Landing
- Pleasantville
- West Creek
- Winslow.

Most of these garages have a single mechanic, but the larger sites (Mays Landing, Glassboro, and Pleasantville) have more than one. ACE also employs a vehicle parts specialist located at the central warehouse in Mays Landing. Two ACE supervisors oversee day-to-day fleet operations, one at each of the two ACE maintenance hubs, Mays Landing and Glassboro.

Exelon coordinates fleet operations across its utility footprint using a Fleet Peer Group consisting of managers from each of the Exelon utilities. This group holds monthly video conferences and quarterly in-person meetings, facilitated by a manager within the Exelon Utilities organization. Exelon is attempting to standardize the fleet policies and procedures across its utilities as much as possible, recognizing that there are some specific circumstances, including regulatory and statutory requirements, requiring some variation. The members of the Fleet Peer Group develop and update these documents based on best practices across all the Exelon utilities. In some cases, the PHI utilities have been the source of more efficient processes that have been adopted by the other Exelon operating units. In general, the Exelon documents provide more detail than the older PHI procedures.

The following table shows the ACE fleet size and repair record from 2014 through 2017. The table shows that ACE leases most of its vehicles. ACE leases its vehicles on a lease-to-own basis. The few vehicles ACE currently owns are mainly heavy equipment of various types.

ACE Vehicles

Leased/ Owned	2014			2015			2016			2017		
	Number	Ave. Age (Years)	Ave. Repairs per Year	Number	Ave. Age (Years)	Ave. Repairs per Year	Number	Ave. Age (Years)	Ave. Repairs per Year	Number	Ave. Age (Years)	Ave. Repairs per Year
Leased	516	6.3		528	6.0		555	6.2		564	5.6	
Owned	48	20.1		49	18.9		49	17.6		48	12.3	
Total	564	7.5	8.7	577	7.1	9.1	604	7.1	8.5	612	6.1	7.8

b. Service Performance Measurements and Benchmarking

PHISCo's Fleet organization uses the following four Exelon-wide KPIs to measure its performance, the first two of which PHISCo also tracked prior to the Exelon merger:

- Fleet Availability Rate
- Vehicle Preventive Maintenance Completion Rate
- Mean Time to Service – Large Aerial Bucket
- Preventive Maintenance Backlog.

The definition of the Fleet Availability Rate measurement changed in 2017 to align with the Exelon KPI definition to use 24-hour/7-day timing rather than the vehicle use schedule. The table below shows the results of these measurements for ACE operations:

Fleet Performance Measurements (Results for ACE)

Measurement	2014	2015	2016	2017
Fleet Availability (%)	97.6%	97.7%	97.0%	96.7%
Preventive Maintenance Complete (%)	98.2%	99.3%	98.8%	98.9%
Mean Time to Service – Large Aerial (days)				15.4
Preventive Maintenance Backlog			2	2

The Fleet organization has participated for a number of years in Utilimarc surveys of utility fleet performance to benchmark its performance and has continued to do so after the Exelon merger. The Utilimarc surveys use several measurements not included among the Exelon KPIs, which the PHISCo Fleet organization tracks to measure its performance.

c. Costs

The following table shows fleet management O&M costs for the fleet management activities performed by PHISCo.

PHISCo Fleet Management Costs

(all amounts above the "Total Costs" line are confidential)

Cost Category	2014A	2015A	2016A	2017A	2018B
Direct Costs and Salary Loaders					
Compensation[1]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Contractors	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Leases, Depreciation, Amortization	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Fuel and Insurance	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Travel, Training and Meals	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Materials and Equipment	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Software	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Office Supplies and Miscellaneous	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Other	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Salary Loaders[2]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Subtotal Direct & Indirect Costs	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Costs from Others					
Legal Services	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
IT	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Facility Space	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Fleet Vehicles	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
HR Employee & Payroll Service	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
BSC Services (not IT)	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Other Crosscharges	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Subtotal Costs From Others	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
TOTAL COSTS	***$42,989***	***$43,358***	***$44,947***	***$47,814***	***$56,351***
PHI Costs Seconded to EBSCo					
EBSCo Billed to PHI					
Restatements					-$5,986
Net Distributed to LOBs	***$42,989***	***$43,358***	***$44,947***	***$47,814***	***$50,365***
ACE Share ($)	*$12,952*	*$13,282*	*$13,760*	*$14,450*	Not Yet Available
ACE Share (%)	*30%*	*31%*	*31%*	*30%*	

[1]Includes labor, incentives, stock-based compensation

[2]Benefits, payrolll taxes, pension, OPEB

The next table shows recent capital costs. Management explained that the variance between the actual capital expenditures and the much larger budgeted amounts in 2016 and 2017 result from two fuel facility replacement projects in those years (West Creek in 2016 and Cape May Court House in 2017), both of which required far lower environmental remediation that budgeted to account for potentially significant remediation costs. The capital budget for the fuel facility replacement projects is managed under Facilities. A much smaller portion of the capital budget and the O&M budget are managed under Fleet.

ACE Fleet Capital Costs

Year	Capital Costs	
	Budget	Actual
2015	$578K	$372K
2016	$3.00M	$141K
2017	$2.90M	$528K

ACE fleet management costs have changed commensurately with those of the PHISCo overall in providing the function for all three PHI utilities. There have been no material costs to or from EBSCo. Budgets for 2018 showed a significant increase, principally due to changes in internal cost exchanges (a significant increase in costs for facility space and a change in the accounting for the costs of vehicle use by the internal "customers" of fleet management).

6. *Physical Security*

This section addresses those organizations supporting ACE's physical security operations and functions related to it.

a. Organization and Processes

Prior to the Exelon merger, a PHI Corporate Security organization managed all security operations for ACE, including operating a security operations center and a contracting center. Since the merger, security functions have split between the PHI Corporate Security organization and the Exelon Corporate Information and Security Services (CISS) organization. Responsibility for identity and access management, NERC compliance, security systems, and the security operations center, including the security operations console have moved to CISS. PHI Corporate Security retained responsibility for physical security resources, critical infrastructure protection, law enforcement liaison, security resource management, site vulnerability assessment, and security investigation. The transition to the new structure is still in progress, but PHI Corporate Security Manager has noted several security enhancements that have already been implemented, including:

- Improved ID cards
- Enhanced monitoring of physical locations
- Better resourcing of the security work.

Management has indicated that PHI Corporate Security has responsibility for security and protection of employees, premises, property, and all forms of information against attack, theft, disclosure, corruption or non-availability, whether by deliberate or accidental means. The specific responsibilities include:

- Establishing security policy
- Setting security standards
- Promoting security education and awareness
- Providing specialist security advice
- Monitoring compliance with the security policy and standards
- Investigating security incidents
- Procuring and oversight of security resources
- Acting as a liaison with Federal, State and local law enforcement and Homeland Security agencies.

The PHI Corporate Security organization has nine positions, led by the PHI Corporate Security Manager and including a Senior Security Specialist dedicated to ACE support. The PHI Corporate Security Manager reports to a corporate security council at Exelon, which also includes peers in the other Exelon operating companies. This council helps to provide information sharing among the Exelon utility security organizations.

The CISS has overall security governance and oversight throughout Exelon and has responsibility for overseeing the development and maintenance of Exelon security operations process and procedures documentation, which includes a peer review process for updating this documentation that PHI Security has been participating in. Exelon has a number of documents outlining policies and procedures applicable to ACE. PHI Corporate Security is in the process of completing the adoption of the Exelon policies and procedures documentation and conforming its procedures to it, but some gaps remain between the current PHI and Exelon procedures.

The Exelon Security Operations Center (ESOC) monitors the entire Exelon footprint, including the ACE facilities and those of other PHI utilities with a backup site and is covered by a disaster recovery plan. The ESOC has 24x7 staffing, monitors alarms, acts as a call center for incident reports, and acts as a "fusion center," combining information from open sources and intelligence organizations and summarizes it for use throughout the Company.

b. Service Performance Measurements and Benchmarking

PHI Corporate Security performs security inspections of operations facilities and substation sites on a random basis and also targets particular sites for inspections when prompted by security incidents. Since 2017, the organization has been scheduling to inspect and assess each site on a three-year basis. The organization also performs inspections of all permanent and temporary posts where security officers are assigned, to assess the post condition, ensure all required equipment and supporting materials are available, and provide education and training to the security officers.

The PHI Corporate Security Manager has noted that security does not lend itself well to intercompany benchmarking, since companies are reluctant to expose information about their security systems publicly. However, communication among peer security officers within Exelon allows some benchmarking since they share issues, trends, and best practices. Industry groups also help to provide best practice information.

c. Costs

The next table summarizes PHI-level corporate security costs, showing charges to and from EBSCo as functions moved between them. There have been material increases in security costs. We reviewed and we examined on site security facilities, systems, and resources working on behalf of ACE. We found they are not only commensurate with the increasing focus of American business on security, but exceptional in making effective use of technology and individual expertise in threat identification and response. In the current U.S. and world environment, we consider a conservative approach, and its attendant costs, a sound approach.

PHI Corporate Security Costs

(all amounts above the "Total Costs" line are confidential)

Cost Category	2014A	2015A	2016A	2017A	2018B
Direct Costs					
Compensation[1]	[redacted]				
Contractors	[redacted]				
Materials, Equipment, Other	[redacted]				
Leases, Depreciation, Amortization	[redacted]				
Travel, Training and Meals	[redacted]				
Salary Loaders[2]	[redacted]				
Subtotal Direct & Indirect Costs	[redacted]				
Costs from Others					
IT	[redacted]				
Facility Space	[redacted]				
Fleet Vehicles	[redacted]				
HR Employee & Payroll Service	[redacted]				
BSC Services (not IT)	[redacted]				
Other Crosscharges	[redacted]				
Subtotal Costs From Others	[redacted]				
TOTAL COSTS	***$2,309***	***$2,420***	***$2,505***	***$3,264***	***$2,269***
PHI Costs Seconded to EBSCo			$0	-$904	$0
EBSCo Billed to PHI			$1,746	$3,271	$3,948
Restatements			$0	($652)	-$253
Net Distributed to LOBs	***$2,309***	***$2,420***	***$4,251***	***$4,980***	***$5,964***
ACE Share ($)	***$460***	***$456***	***$491***	***$479***	Not Yet Available
ACE Share (%)	***20%***	***19%***	***20%***	***15%***	

[1]Includes labor, incentives, stock-based compensation

[2]Benefits, payrolll taxes, pension, OPEB

7. Supply Chain

a. Organization and Processes

As part of the PHI merger with Exelon, responsibility for procurement, materials management, and other supply chain functions transferred from PHISCo to EBSCo. A Vice President of PHI Supply Integration reports to the Utilities Supply Operations Vice President in EBSCo Strategic Sourcing but also reports on a dotted-line basis to the PHISCo Support Services Vice President. A Manager in the PHI Supply Integration organization has responsibility for ACE and Delmarva supply chain operations. A supervisor responsible solely for ACE operations reports to that manager, with 16 storekeepers reporting to that position distributed across the seven warehouses in the ACE region:

- Bridgeton
- Cape May Courthouse
- Glassboro

- Mays Landing
- Pleasantville
- West Creek
- Winslow.

The number of these positions supporting the ACE warehouses has remained stable through the Exelon merger.

In addition to the warehouse management groups, there are procurement specialists that manage procurement for the PHI utilities, including group requisitions for all the PHI utilities. This group has 12 positions plus a manager, having been reduced by four positions from its pre-merger size as part of the merger savings. Besides the PHI-specific supply chain organizations, EBSCo has a strategic sourcing group that supports all the Exelon utilities including Pepco, Delmarva, and ACE. The previous PHISCo strategic sourcing group has been absorbed into this organization after a reduction of seven positions.

The Vice President of PHI Supply Integration helps to coordinate these supply chain activities with the needs of the PHI utilities by attending biweekly meetings on large projects to monitor how well the projects are proceeding. The Vice President also speaks regularly on an informal basis with utility personnel. PHI Supply Integration also assists the strategic sourcing group in managing and monitoring suppliers to the PHI utilities.

With the merger, the PHI utilities have now largely adopted the Exelon supply chain processes and procedures, including documentation for such functions as procurement, supplier management and measurement, and warehousing and inventory control. The warehousing procedures allow for some variation among the Exelon utilities, although the Company is trying to achieve greater consistency and process standardization in order to achieve savings and has recently achieved consistency across the PHI utilities through the use of common software and inventory cycles. The Exelon procedures incorporate a number of controls such as the requirement for a supply professional to be involved in executing purchase orders, alignment of SOX controls across all the Exelon utilities, now including the three PHI operating companies, and increased monitoring of inventory management. Exelon also has a formal supplier improvement process.

b. Service Performance Measurements and Benchmarking

The Company uses a number of performance measurements to track materials management and other supply chain performance. The table below shows the results of measurements for ACE operations from 2014 through 2017.

Supply Chain Performance Measurements (Results for ACE)

Measurement	2014	2015	2016	2017
Inventory Accuracy	98%	99%	99%	99%
Year-End Inventory Value	$19.6M	$20.2M	$21.4M	$28.1M
Inventory Turnover Rate	1.19	1.26	1.47	1.46
Purchase Orders Created	2,280	2,272	2,772	2,732
Purchase Order Lines Processed	17,594	19,235	21,690	19,382
Slow Moving Inventory Balance	N/A	N/A	N/A	$3.5M
Purchase Order Spend	$197.3M	$275.5M	$267.5M	$303.7M

As the ACE and other PHI utility operations have become integrated into the Exelon systems, the supply chain organizations have begun tracking additional Exelon-wide supply chain measurements at the total PHI level. The VP of PHI Supply Integration attends quarterly PHI leadership meetings and PHI COO staff meeting to obtain informal information about how supply chain and procurement support is doing. EBSCo also periodically surveys its business partners to help assess satisfaction with its services, but supply chain management has not been the part of such a survey since the merger.

Exelon benchmarks its supply chain performance using the biennial Utility Purchasing Management Group (UPMG) supply chain benchmarking study.

c. Costs

The following table shows the budgeted and actual expenses for ACE warehouse management from 2014 through 2017:

ACE Warehouse Management Budget and Actuals

	2014	2015	2016	2017
Budget	$4.4M	$4.6M	$4.9M	$5.0M
Actual	$5.1M	$5.4M	$5.4M	$5.7M

The VP of PHI Supply Integration has explained that the ACE warehousing's consistent exceeding of the budget over this period resulted from excessive use of overtime to manage the warehouses, which had not been properly budgeted for. ACE has a relatively small warehouse staff, so the Company utilized a large amount of overtime to ensure that customers are properly supported with reliable service in a region that has a large tourist industry. The VP believes that there is an opportunity to address this through adjustments in warehouse staffing and is currently studying this.

8. Document Management

a. Organization and Processes

As part of the reorganization associated with the PHI merger with Exelon, responsibility for document management transferred from PHISCo to EBSCo. The management model for records management has changed significantly between the old PHI model and the Exelon model under which PHI and ACE now operate. In the PHI model, a two-person PHISCo Records Management group acted as a centralized hub for sending and retrieving records to the PHI archive vendor. The business unit personnel were responsible for deciding what should be archived and retrieved under the oversight of the Records Management group, but then relied on the Records Management group to execute the document transfers to and from the archive vendor. The Legal Department rather than the Records Management group set the records management policy.

Now that records management has transferred to EBSCo, a two-person group, led by the Exelon Program Manager, still oversees the records management process, but it operates under a different model. The EBSCo Records Management group operates under the EBSCo Legal Department's Compliance, Ethics, and Records Practice group. It has oversight of records management policies and processes and has responsibility for maintaining the retention schedule for Exelon overall. The execution of all the records management processes is distributed to the business unit personnel. This means that the policy and oversight of the process for PHI and ACE is set at EBSCo, but the actual document management lies within various PHI and ACE organizations. Exelon consolidated off-site storage and retrieval under a single vendor following the merger. EBSCo Records Management group manages the relationship with this vendor.

An Exelon executive steering committee for records management meets quarterly and has responsibility for developing and overseeing a long-range plan including initiatives to improve the records management process. At the time of our audit field work, management had underway (and reportedly has since completed) a process for integrating PHI into the Exelon records management process. The PHI representative on this committee is the PHISCo Vice President of Support Services.

The documented Exelon records management procedures undergo review and update on two- or three-year cycles. Various business unit personnel have assigned responsibilities for executing the process. The Company provides on-line, webinar, and in-person training to employees with records management responsibilities. These employees must complete this training in order to access the systems necessary to complete their records management functions. Exelon has a custom-built system that acts as a compliance resource tracker that tracks personnel with different compliance obligations. This includes employees with records management responsibilities, for which the system tracks what organization they are in, whether they have moved organizations recently, whether they have completed their training obligations, and the like. All Exelon employees must complete Code of Conduct compliance training, which contains a records component and other components that can vary from year to year. There is also a general records awareness module available that is not currently required for all employees to complete but is recommended by most business units. The records management process allows each business unit or department to tailor its processes and procedures to specific needs and therefore can have guidelines, processes, or systems that can go beyond the requirements in the Exelon policies and procedures documents. However, all must, at a minimum, meet Exelon's procedural requirements.

Each business unit or department must complete annual records review and self-assessments to ensure proper records management. The EBSCo Records Management group collects the yearly assessments and reviews them for non-compliance and to ensure that all have completed the process. There are no audits specifically of records management. However, Internal Audit includes records management requirements as part of each of their audits, looking at the self-assessment forms to determine if the departments they are auditing have correctly assessed their records management performance and are correctly showing all instances of non-compliance.

b. Service Performance Measurements and Benchmarking

Prior to the Exelon merger, PHISCo Document Services measured its performance in delivering offsite records by the requested delivery date. This measurement effectively tracked how well the organization was acting as the Company's interface to the storage vendor. With the change to the Exelon "self-service" records management model after the merger such measurements were no longer necessary. They have effectively been replaced by measurements of the storage vendor's performance.

The Exelon storage vendor has also provided a one-time benchmarking report on records management performance and provides broad statistics to Exelon including the percentage of records found, on-time retrieval rates, storage volume, and storage volume growth. Currently, the benchmarking that the records management group performs is largely through informal contacts with peers in industry organizations.

c. Costs

The following table shows budgeted and actual O&M expenses for records management in 2016 and 2017 for all the PHI companies. The numbers only show the expenses for the storage vendor and not the internal labor costs, which are relatively small for the EBSCo Records Management group itself compared to the vendor expenses. The Records Management Senior Manager has explained that the actual expenses were higher than budget in these two years because of higher-than-expected expenses associated with the transition from PHI to Exelon, specifically associated with the transfer of the PHI records from the PHI to the Exelon storage vendor and the implementation of a secure shredding process throughout PHI.

Records Management Budgeted and Actual O&M Expenditures for PHI (Rounded)

Year	O&M Budget	O&M Actual
2016	$205K	$230K
2017	$250K	$279K

9. Information Technology

a. Organization and Processes

Information technology (IT) support for ACE and other PHI utilities transferred from PHISCo to EBSCo at the time of the Exelon merger. This transfer moved IT support of the PHI utilities to the Exelon IT management model, which uses a functional organization but assigns some vice presidents of functional divisions additional responsibility for ensuring the support of the specific internal business units, including the utilities. An Exelon Senior Vice President and Chief Information Officer (CIO) leads the IT organization. Almost all employees in this organization have assignments in functional divisions, some of which provide enterprise-wide infrastructure support, while others provide IT applications and functions specific to the various lines of business. Four divisions led by vice presidents provide utility-specific functional support:

- Work/Asset Management

- Real Time Systems
- Customer Applications
- Digital Grid.

The Vice Presidents in charge of each of these four utility-specific functional divisions also have support responsibility, acting as the CIOs for each of the four Exelon utility groups: ComEd, PECO, BGE, and the PHI utilities. The vice president of the Work/Asset Management division currently is the CIO for the PHI utilities, including ACE, and reports on a dotted-line basis to the PHI CEO. The Exelon corporate CIO organization has assigned a planner to assist this vice president with the PHI-support function. The PHI CIO helps to ensure that the PHI utilities' needs are met both from informal conversations with peer leaders and participating in formal processes, such as monthly meetings to review metrics and discuss the progress of specific projects. The PHI CIO also attends PHI staff meetings every two to three weeks to discuss any IT issues that may arise.

The Exelon IT organization is large, with approximately 5,000 full time equivalent positions, consisting of approximately 1,600 employees and 3,400 contractors. The IT organization uses the contractors primarily on project work, to cover spikes in resource needs, and to provide a specific expertise not available within the employee base. They also help provide some continuing support functions, such as the IT service desk.

The Company believes that the Exelon IT management model effectively balances the advantages of the range and depth of resources available in a large IT organization with the ability to support the specific needs of each Exelon business unit. The large organization helps to achieve economies of scale in IT purchasing and making sure that vendor products have features that the Exelon companies require while also providing efficiencies associated with the consistency in processes and measurements. The business planning process looks at each operating company and what is unique to it, ensuring that all operating companies are represented in determining the requirements for applications. The CIOs assigned to the business units also help to ensure that the needs of their assigned business units are being met.

As part of the merger reorganization, employees in the former PHI IT group were assigned to the various Exelon functional divisions depending on their work area. Some IT-related functions that were previously managed by the PHI business units, such as utility communications and real time systems, transferred to Exelon IT. PHI enterprise-wide corporate support was split among the Exelon application areas.

Responsibility for the PHI security function, including cybersecurity, was transferred as part of the merger reorganization from PHI IT to the Exelon CISS organization, which is not part of Exelon IT. As noted in the Physical Security section of this chapter, CISS has responsibility for both cyber and physical security policy. Exelon IT does provide input to CISS, particularly on cyber issues, and has responsibility for NERC Critical Infrastructure (CIP) compliance.

Responsibility for development of new IT applications resides within the functional divisions, either the enterprise-wide functional groups or one of the business-unit-focused groups, depending on the nature of the application. Exelon uses a three-phase approach to development:

- Phase 1: Investigation
    - Assess whether it is possible to adapt an existing application to the need (the first choice, if possible).
    - Otherwise consider whether to buy or adapt an off-the-shelf product or develop internally.
    - Perform a cost/benefit analysis to assess which is the best option.
    - Perform an initial architecture review.
- Phase 2: Detailed design
- Phase 3: Execution

If Exelon does not already have the necessary functionality for an internal requirement in an existing application, the Company prefers to buy rather than develop the applications internally, currently looking more at cloud-based solutions. Internally built applications are now very rare, amounting to only a very small percentage of the existing applications. New internally built software applications mainly include such items as analytical software and new mobile applications (but even here using a standard platform).

Exelon tries to avoid customization of applications. Its goal is to achieve a common process across all the operating companies, if possible. Whether Exelon has sufficient expertise to perform customization internally depends on the product. Exelon relies mainly on the product vendor rather than packaging firms to do the customization if it is needed. Exelon's size allows it to more readily persuade product vendors to ensure that features needed within Exelon are already in the product and do not require customization.

When implementing new applications, Exelon uses a robust set of initial testing methods (unit testing, system testing, and the like) followed by user acceptance testing, with test cases developed by business unit users. Before final release of the application, Exelon IT performs a series of tests in the production environment. The business units are primarily responsible for training, manuals, and communications related to the new applications with support from IT. During the initial implementation, a support group, consisting of a mix of business unit and IT employees, but with the business unit employees most prominent, is available to help resolve problems and identify defects to fix. In larger application implementations, the business unit employees involved in the support tend to have considerable IT experience and knowledge and they are supplemented by new people whom they train. High-end support continues for 30 to 60 days. Business readiness testing is led by the business units with IT in support. Changes to software are subject to a change management process. Exelon IT also employs a continuous improvement process.

Exelon IT technical support consists of three layers:

- Layer 1: A service desk operated by an outside provider under contract.
- Layer 2: Support for all the applications lies within one of the IT functional portfolios. The resources within these groups provide support to employees with special challenges that cannot be addressed by the service desk.
- Layer 3: If problems cannot be solved expeditiously by the first two layers of support, they can be escalated up the management chain.

Large applications also have support personnel within the lines of business, who have great familiarity with the application and can assist employees within their business units. Employees may first contact these organizations for assistance also. To assess how applications are working, Exelon performs a monthly analysis of help desk tickets by application and function, performing root-cause investigations.

Exelon IT has documented procedures for disaster recovery. All Exelon real-time systems have hot alternatives and twice-yearly fail-over tests for disaster recovery. Recovery of other infrastructure is to a different system or to the cloud, and recovery of the different systems is tested at least annually and on different cycles.

As of the time of this audit, integration of PHI with Exelon IT processes and systems was still in progress. Examples of integration activities not fully complete include NERC-CIP compliance and the Work Management platform, which is still in the process of transferring to the PHI financial system. Not many PHI legacy systems still need to be supported by Exelon, although Exelon IT is in the process of archiving data from the legacy systems in order to preserve it for future use.

b. Service Performance Measurements and Benchmarking

The transfer of IT support to the Exelon IT organization with the Exelon merger also led to a change in the IT service performance measurements tracked and reported internally. The PHI IT organization's reported measurements were somewhat more disaggregated than those currently reported on a standard basis by Exelon IT, providing more results at the functional or application level in some cases and until the end of 2014 showing some results split between Pepco and ACE/DPL. Exelon IT reports measurements at the PHI level. It does not typically report measurements at the utility level; many applications are shared systems, which makes reporting at the utility level difficult. The organization does have the ability to examine the data in more detail however, to identify issues at the application and utility levels when there is a need to analyze issues that may arise. The organization has indicated that it uses an Information Technology Infrastructure Library (ITIL) model for its measurements but is continually evolving them.

The current reported measurements used and their results for PHI for 2016 and 2017 are shown in the following table.

IT Performance Measurements (Results for PHI)

Performance Measurement	2016		2017	
	Target	Actual	Target	Actual
Critical Systems (SAIFI) – Unplanned Outages	36	26	29	18
Critical Systems (SAIFI) – Planned Outages	105	67	241	84
Critical Systems Availability (CAIDI)	99.85%	99.88%	99.88%	99.88%
CC&B Service Delivery Quality	99.00%	99.87%	99.00%	97.37%

IT also tracks the spend of its workforce on smart phones, cell phones, and air cards, which has been below the target level.

Exelon IT uses Gartner benchmarks for gauging infrastructure and percent-of-revenue spending. The IT organization also uses a utility-specific benchmarking database which was updated at the beginning of 2018. The organization also uses industry groups to informally share benchmarking information.

c. Costs

Exelon IT uses a strategic and business planning process to decide how to deploy its resources across the Company to meet the needs of the various business units. The following table shows budgeted and actual O&M expenses for IT in 2015, 2016, and 2017 for ACE. The PHI CIO indicated that the budgeted and actual expenses were high in 2017 both because of transitions between the former PHI and new Exelon IT applications and because of the geographic movement of employees. The actual expenses were less than the budget that year because of:

- Acceleration of synergies (positions were eliminated faster than planned).
- Timing in the refreshing of equipment.
- The ability to integrate the PHI Oracle applications into the Exelon Oracle contract.

IT Budgeted and Actual Expenditures for ACE (Rounded)

Year	O&M		Capital	
	Budget	Actual	Budget	Actual
2015	$31.14M	$30.73M	$8.27M	$5.53M
2016	$30.29M	$31.64M	$11.29M	$7.97M
2017	$35.93M	$33.25M	$19.07M	$13.64M

Overall, PHISCo (and subsequently EBSCo beginning in 2018) have reduced IT costs at the PHISCo level. The EBSCo Billed to PHI row shows the increasing assumption of IT work by EBSCo following the merger.

IT Costs

(all amounts above the "Total Costs" line are confidential)

Cost Category	2014A	2015A	2016A	2017A	2018B
Direct Costs and Salary Loaders					*Transferred to EBSCo*
Compensation[1]	[redacted]	[redacted]	[redacted]	[redacted]	
Contractors	[redacted]	[redacted]	[redacted]	[redacted]	
Software	[redacted]	[redacted]	[redacted]	[redacted]	
Leases, Depreciation, Amortization	[redacted]	[redacted]	[redacted]	[redacted]	
Travel, Training and Meals	[redacted]	[redacted]	[redacted]	[redacted]	
Materials, Equipment, Other	[redacted]	[redacted]	[redacted]	[redacted]	
Salary Loaders[2]	[redacted]	[redacted]	[redacted]	[redacted]	
Subtotal Direct & Indirect Costs	[redacted]	[redacted]	[redacted]	[redacted]	
Costs from Others					
IT	[redacted]	[redacted]	[redacted]	[redacted]	
Facility Space	[redacted]	[redacted]	[redacted]	[redacted]	
Fleet Vehicles	[redacted]	[redacted]	[redacted]	[redacted]	
HR Employee & Payroll Service	[redacted]	[redacted]	[redacted]	[redacted]	
Other Crosscharges	[redacted]	[redacted]	[redacted]	[redacted]	
Subtotal Costs From Others	[redacted]	[redacted]	[redacted]	[redacted]	
TOTAL COSTS	***$86,147***	***$80,836***	***$77,939***	***$73,914***	***$0***
PHI Costs Seconded to EBSCo					
EBSCo Billed to PHI			$9,482	$61,435	$194,031
Restatements			$0	-$55,167	-$110,784
Net Distributed to LOBs	***$86,147***	***$80,836***	***$87,421***	***$80,183***	***$83,247***
ACE Share ($)	*$16,062*	*$16,946*	*$17,408*	*$17,567*	Not Yet Available
ACE Share (%)	*19%*	*21%*	*20%*	*22%*	

[1]Includes labor, incentives, stock-based compensation

[2]Benefits, payrolll taxes, pension, OPEB

C. Conclusion

1. The restructuring of legal services following the Exelon merger has promoted efficiency, while retaining at the PHISCo level the provision of legal services related to regulatory matters.

Exelon has consolidated legal functions that are most effectively and economically performed centrally. It has also aligned legal resources at the Exelon level to concentrate appropriately on needs for legal expertise common to its utility operations. Exelon has also created a structure that provides a reasonable degree of separation for those legal functions focused on its generation and marketing operations. Leaving the legal needs associated with PHI's regulated utility operations at the PHISCo level continues the pre-Exelon merger approach and appropriately supports keeping the management of regulatory matters at a sufficiently local level, from the ACE perspective. The assignment of a senior PHISCo attorney to ACE matters also supports this localizing approach.

Both total PHISCo legal costs and the shares of those costs borne by ACE have fallen since the merger.

2. Effective approaches, systems, and methods support effective performance and control of legal functions.

Exelon employs a structured method for retention of outside counsel, promoting the use of common, high-performing firms, while allowing its utility operating entities (PHISCo on behalf of ACE) to make other choices where circumstances allow. A well-designed, effectively executed system exists for ensuring proper billing for outside service rendered and for the entry of time by matter by internal legal resources. We did not find a strong system for ensuring that internal resources minimize default entries that serve to allocate costs broadly among affiliates. A common issue across many functions, remedying it is addressed in Chapter IV, *Cost Allocation Methods*.

3. Changes in Insurance and Claims organization and operations since the Exelon merger have promoted both efficiency and effectiveness.

Consolidation of the insurance function leaves for all of Exelon, including the PHI utilities a four-person organization, compared with the two employed for PHISCo alone before the merger. That consolidation has also brought management of insurance for PHI under a comprehensive approach that annually addresses risk levels, risk tolerance, and insurance market developments as part of yearly decisions on continuation and change to insurance coverages. Consolidation of policies at the Exelon level also takes advantage of its greater size and attractiveness to insurers. At the same time, PHI executive management remains engaged in the process of determining risk appetite, leaving room for variations in insurance coverage where determined appropriate.

The Claims function has remained under PHISCo following the merger, but Exelon has also brought a broadened approach to its mission. The function moved from the PHISCo legal group to Support Services. More significantly, the broadening of its mission arose through adding to the group's management of claims against the company by third parties, the company's management of claims for damages to its property, and a damage prevention function. Adding this last area brought a staff of six, formerly dispersed among a number of PHISCo organizations. We find particularly notable the combination of prevention and claims management activities, which brings together expertise that should serve to enhance prevention efforts. The Claims resources have increased due to this consolidation, but reflect movement from other organizations, as opposed to significant net increases.

4. The Facilities, Real Estate, and Fleet support services groups have appropriate staffing, organization, and processes to support ACE and have remained largely unaffected by the Exelon merger.

The Facilities and Real Estate groups supporting ACE have remained in PHISCo through the Exelon merger reorganizations, with relatively stable personnel and staff sizes. Fleet also continues to be managed by PHISCo with ACE employees providing the local operational functions. The sizes of these organizations and the processes they employ continue to be sufficient to provide reasonable service to ACE.

The Exelon merger has, as noted in following conclusions, brought some positive changes even to these groups, including improved policies and procedures documentation, enhanced and expanded performance measurements, and coordination and cooperation with other Exelon utilities in identifying and employing best practices.

5. The Exelon merger has significantly affected the organization and some aspects of the operations of Supply Chain and Security support services provided to ACE; the reconfigured organizational design and resourcing is appropriate for providing adequate support to ACE.

Overall responsibility for the functions transferred to Exelon, while some resources dedicated to the operations of the PHI utilities, including ACE, have remained within the PHI utilities. The transformation in support operations produced by the Exelon merger has produced some sharing of the supply chain and physical security functions between EBSCo and PHISCo or ACE. Management of the supply chain function has transferred entirely to EBSCo, although ACE employees continue to provide some functions at the operational level, including operating the ACE supply warehouses. Management of security policy and some operational functions now are within EBSCo's CISS organization, while some of the local management is maintained by PHI Security. The staffing size and composition of these organizations at the ACE working level have remained fairly stable through the transition.

For both Supply Chain and Security, the split of functions is logical, and should provide adequate support for ACE. Transfer to EBSCo of the policy and governance functions for Security and management functions for Supply Chain has the potential to provide efficiencies through economies of scale. For example, Exelon corporate security organizations are providing enhanced security monitoring of the ACE facilities. Also, the former PHISCo strategic sourcing group was absorbed into an existing EBSCo organization with some reduction in staffing, and the size of the EBSCo group managing procurement for the PHI utilities is now somewhat smaller than the former group at PHISCo, which the Company attributes to merger savings. However, as noted in Conclusion #4, it is still too early to assess the ultimate magnitude of such savings because many aspects of the transition are still in progress.

6. New, post-merger operating models and procedures are designed to effectively support ACE's operations and also offer opportunities for enhanced support.

The Exelon merger has led to the complete replacement of the former PHI operating models and procedures by those of Exelon for the Information Technology and Document Management services supporting ACE. As part of the reorganization accompanying the merger with Exelon, the former PHI IT organization has been folded into the Exelon IT organization in EBSCo with the result that ACE's IT requirements are now completely provided by the Exelon IT department.

The Exelon IT department operates under a different model from that of the former PHI IT group. Exelon IT is organized functionally with some divisions providing enterprise-wide infrastructure support and others providing IT applications and functions specific to the various lines of business, including four that provide utility-specific functional support. Some of the vice presidents leading these divisions have an additional responsibility to act as the CIO for one of the business units. The vice president assigned to be CIO for the PHI utilities heads one of the divisions providing and supporting some utility-specific applications and, in the CIO role, reports on a dotted line basis to the PHI CEO.

The larger size and scale of Exelon IT relative to the former PHI IT group offers advantages to ACE and the other PHI utilities. Among these are the availability of more robust applications through product standardization and stronger relationships with vendors, wider peer group collaboration and internal benchmarking, and access to more IT resources and a wider range of IT expertise. More contention for these resources is a potential downside. However, the Exelon IT organizational structure and its policies and procedures appear to provide the ability for smaller units like ACE within the larger Exelon organization to meet their needs. The extent to which that will work out in practice still needs to be seen.

Overall responsibility for the records management function also transferred entirely to Exelon with a change in the operating model for this function. Under the Exelon operating model, the individual Exelon operating units have responsibility for implementing and complying with corporate records management procedures. A small group in the Exelon Legal Department has responsibility for documenting and updating the records management policies and procedures, tracking and ensuring that the business units are complying with the procedures, and managing the relationship with the external document storage vendor. The Company provides training for personnel in the business units with document management responsibilities and requires annual assessments by each business unit of document management compliance. The annual Code of Compliance training also includes a component about document management requirements.

7. The merger of PHI with Exelon has already produced some positive effects for ACE. However, it is still too early to judge the ultimate impact of the Exelon merger on quality and cost of the support services provided to ACE because a number of transition activities remain in progress.

The merger with Exelon has provided some notable benefits and process improvements to support services organizations, even for those groups, such as Facilities Management, Real Estate, and Fleet, that have been relatively unaffected organizationally by the reorganizations and transitions associated with the merger. These include:

- More structured, comprehensive, and systematic policies and process documentation along with procedures for regular updating and enhancement of the documents based on input from peer organizations across the Company that are responsible for executing the processes.
- A formal process for coordination, cooperation, and sharing of experiences and best practices among all the Exelon utilities through regular and frequent meetings of peer-to-peer management groups for each functional area.
- Standardization of processes, requirements, and performance measurements across the utilities but with the provision for variation at the individual utility level where appropriate and necessary.

The merger-related reorganizations of support services that have been partly changed (Supply Chain and Security) or completely changed (IT and Document Management) are logical and appropriately take advantage of opportunities for economies of scale and enhanced resource and expertise availability within a larger organization. However, because the transitional activities were still in progress at the time of this audit, the ultimate impact of these changes is still uncertain.

8. The organizations providing Facilities, Real Estate, Fleet, Supply Chain, Physical Security, Document Management, and Information Technology support services to ACE use good measurements to track the quality of the service they provide.

The results of these measurements indicate that the services provided generally appear to be effective.

Along with the merger, the support services organizations have largely moved to a new performance measurement system that is uniform throughout Exelon but with the provision for adding specific measurements to track at the individual organizational level. The measurements used by the support services Liberty reviewed are good. The results of these measurements indicate that these support services organizations are generally performing well.

9. Several of the support services organizations use benchmarking to assess the efficiency and effectiveness of their services relative to industry peers; the benchmarking results provided to Liberty indicate that these organizations are generally operating well.

A number of support services organizations use formal benchmarking studies to assess their performance relative to the industry, several of which (Fleet and Supply Chain, for example) do so annually and others (Records Management, for example) do so occasionally. Those studies (Fleet and Records Management) that Liberty was able to review indicate that the Exelon groups are generally doing well relative to industry norms.

The support services groups generally indicate that they do informal benchmarking both with peer groups within Exelon, where this is appropriate, or with peers in industry groups. However, formal studies where they are available and applicable to a support service function can be an invaluable resource to assist in improving performance for an organization, and their wider use within the support services groups should be encouraged.

D. Recommendations

We have no recommendations in the area of Support Services.