December 4, 2015

On behalf of the New Jersey Energy Coalition's (Coalition) member companies and organizations, the Coalition would like to congratulate the Christie Administration, particularly the New Jersey Board of Public Utilities and the New Jersey Department of Environmental Protection, for their outstanding efforts in updating the 2011 Energy Master Plan. We are particularly encouraged by the BPU's efforts to-date in promulgating increased regulatory certainty for infrastructure investments, renewed emphasis on delivery system resiliency, as well as the Board's continued support for nuclear power generation.

We are pleased to see that a number of the recommendations submitted by the Coalition during the comment period have been addressed in the draft document. There are a number of our recommendations, however, for which we would like to re-emphasize our support before the updated EMP text is finalized and the document is released. Specifically:

- Promote regulatory certainty that would enable energy delivery companies to efficiently deploy capital investment in infrastructure and delivery system reliability and resiliency. Subject to the BPU's oversight and prudency review, create long-term financing mechanism for addressing large scale infrastructure investments that would provide more financial certainty from a planning perspective, a steadier and more predictable utilization of workforce and supply chain resources, all with long-term benefits to the state's ratepayers and consumers.

- Prominently note NEW nuclear energy's central role in meeting the state's environmental and economic objectives. This is particularly important in light of the scheduled shutdown of Oyster Creek nuclear plant in 2019. New nuclear power will greatly assist the state in meeting its Clean Air requirements.

- Lastly, there should be prominent note made of the need for long-term commitment to clean burning natural gas. Connectivity to proven supply sources located in our market area should be encouraged and leveraged to help hold down or reduce energy prices for the state's ratepayers and consumers.

In closing the Coalition again wishes to express our appreciation to the BPU for the opportunity provide input to this critical document. The Coalition and its members are key stakeholders in the vital mission of improving energy delivery to New Jersey's residents and we welcome the opportunity to assist the BPU in improving the EMP.

Thank you for your consideration.

Rich Jackson

Executive Director

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EDF
ENVIRONMENTAL
DEFENSE FUND
Finding the ways that work

December 4, 2015

Via Electronic Mail

New Jersey Board of Public Utilities
44 South Clinton Avenue
Trenton, NJ 08625

RE: Energy Master Plan Update

Dear NJBPU Commissioners:

The Environmental Defense Fund ("EDF") thanks New Jersey Board of Public Utilities ("BPU") for this opportunity to comment on the Energy Master Plan (EMP) Update. EDF is a national non-profit membership organization engaged in linking science, economics and law to create innovative, equitable and cost-effective solutions to society's most urgent environmental problems. EDF has more than one million members nationwide and over 56,000 in New Jersey. As an organization, EDF has been active in New Jersey on environmental issues since the 1970's.

Environmental Defense Fund (EDF) seeks to accelerate our country's transition to cleaner, more efficient energy—and a grid that uses the growing power of information networks—to slash harmful pollution, give people control over their energy costs and grow our economy. The Energy Master Plan Update provides opportunities to adopt policies and to pursue strategies that will reinforce and ensure New Jersey's clean energy future.

Smart Grid and Distribution Automation Plans

EDF commends the Update's new, broader perspective on grid modernization and the recommended expansion beyond smart meters to include distribution automation. Storms and other extreme weather events like Superstorm Sandy continue to test the limits of the existing electric grid, prompting the need for increased resiliency in design and operation. Grid upgrades can help to reliably and efficiently accommodate dynamic system conditions and help to integrate clean energy resources. In addition some distribution automation capabilities, such as Integrated Volt/Var Control, offer potentially significant improvements in the energy efficiency of the distribution grid, with associated conservation, economic benefits, and reliability benefits. These merit specific and direct consideration.

Energy Efficiency and Private Capital Investment

EDF applauds the New Jersey Board of Public Utilities for their leadership adopting the Investor Confidence Project pilot, the first ICP state incentive program of its kind in the country, designed to assess the benefits of adopting ICP protocols for NJCEP's commercial projects as they seek to increase private investment for energy efficiency within the state.

Energy Resiliency Bank

The Environmental Defense Fund continues to support the vision of the State of New Jersey in designing and bringing the market the nation's first Energy Resilience Bank (ERB). The ERB, by delivering public

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capital into critical resilience initiatives and levering those limited public funds to engage private capital markets can catalyze New Jersey's energy economy and serve as a model for other such efforts across the nation. EDF further commends the vision of the ERB in acknowledging the critical importance that energy efficiency plays in crafting a sturdy, sustainable and resilient energy infrastructure.

It is our view that reducing energy consumption through the implementation of essential energy efficiency efforts by definition makes the grid and critical infrastructure more resilient and secure. Increasing the efficiency of New Jersey's built environment (in both critical and non-critical facilities) reduces stress to the infrastructure as well as energy consumption making the grid and critical facilities less vulnerable to catastrophic environmental events. To this end, energy efficiency is a key component and should be fully embedded within any effort to make New Jersey more resilient and secure.

Leveraging the ERB to assist in achieving the EMP energy efficiency and distributed generation goals through better coordination with the NJCEP energy efficiency programs and the Energy Savings Improvement Program (ESIP) can ultimately serve to unify the state's resilience, energy efficiency and distributed generation efforts and establish a more robust clean energy market that will provide the residents and businesses of New Jersey with the biggest benefits at the least cost.

Microgrids:

As EDF stated in its August 24, 2015 comments on the Update to the 2011 Energy Master Plan,[1] "New Jersey's leadership on microgrid development positions it at the forefront of a national movement to establish the rules and marketplace that will enable a resilient energy system..." We eagerly await the release of the BPU Staff microgrid report and recommendations for next steps. And we trust that policies that the Board explores will include consideration of both widespread and local environmental impacts particularly given that common generation resources for microgrids are generally smaller and can be less efficient and potentially increase GHG emissions. Policies should require that the cleanest generation options be prioritized and incentivized.

Demand Response

EDF appreciates the Board of Public Utilities' recognition of the value of Demand Response. If the Supreme Court rules that Demand Response programs cannot continue through PJM markets, the state should act quickly to find alternative pathways to encourage and compensate electricity users to lower consumption and help stabilize the grid.

Clean Power Plan

EDF believes that the Clean Power Plan provides a framework for the state of New Jersey to further its goals for a resilient, reliable and clean energy system. New Jersey's long-time national leadership developing energy efficiency and solar markets positions it well to comply with the Clean Power Plan that will promote economic development and job creation as well as the general health and well-being of its citizens.

Natural Gas Infrastructure

As noted by the BPU in the draft EMP update, since the release of the 2011 EMP, the BPU has approved close to $1 billion for gas utility infrastructure upgrades and mitigation projects with an additional $280 million pending before the BPU for approval. EDF applauds this recognition by the BPU and New Jersey

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[1] EDF EMP Update FINAL 8.24.15.docx

of the need for, and multidimensional benefits to public safety, environment and the ratepayers from modernizing its aging natural gas distribution system. Recent developments in the New Jersey regulatory space relating to the design and implementation of large scale gas infrastructure modernization programs underscore the benefits of using new, cutting edge technologies to optimize the ratepayer and environmental benefits of such programs. These developments shine a light on the need for the EMP to consider ways to:

(a) accelerate the adoption of new, beneficial, cutting edge technology, such as advanced leak detection, and leak quantification, by New Jersey utilities at scale, and
(b) ensure that New Jersey utilities use best practices as part of their leak management efforts.

1. Background

New Jersey's focus on replacing aging, leak-prone gas infrastructure with less leak-prone materials is in line with initiatives by a number of federal agencies highlighting the need to improve the state of the nation's natural gas infrastructure. In 2011, the U.S. Department of Transportation and the Pipeline and Hazardous Materials Safety Administration issued a "call to action" to actively engage all state pipeline regulatory agencies, technical and subject matter experts, and pipeline operators to focus on identifying pipeline risks to accelerate the repair, and replacement of the highest risk gas and liquid pipeline infrastructure.[2] Along similar lines, the Federal Energy Regulatory Commission has issued a policy statement that will allow interstate natural gas pipelines to recover certain expenditures relating to the modernization of pipeline infrastructure to enhance system reliability, safety, and regulatory compliance.[3] In 2014, following a series of stakeholder discussions focused on reducing methane emissions from gas transmission and distribution systems, the U.S. Department of Energy announced a set of new initiatives including a partnership with the National Association of Regulatory Utility Commissioners to provide technical assistance for gas distribution system modernization and a clearinghouse for related information on effective technologies and policy strategies.[4]

In summary, a broad consensus is emerging around the need for, and benefits of, modernizing natural gas infrastructure. However, in order to optimize the ratepayer and environmental benefits of large scale infrastructure modernization investments, they must be prioritized using available data on leak size which can be gathered using cutting edge leak quantification methodologies. Methane, the primary constituent of natural gas, is a potent greenhouse gas with serious implications for global climate change: over a 20-year time frame, each pound of methane is 84 times more powerful at retaining heat in the atmosphere than a pound of carbon dioxide. Data shows that a small number of large leaks are responsible for a disproportionate share of methane emissions from natural gas systems.[5] Prioritizing pipelines emitting the largest volumes of methane as part of large scale pipeline replacement programs is therefore beneficial not only for ratepayers and public safety, but also for the environment.

2. New developments in New Jersey

The BPU, New Jersey Division of Rate Counsel and other stakeholders recognized the multi-dimensional benefits of this approach in a recent proceeding initiated by Public Service Electric & Gas (PSE&G), New Jersey's oldest and largest utility, in which EDF participated as an intervening party. In that proceeding, the BPU approved a settlement agreement entered into by all parties which provided that PSE&G would,

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[2] See generally http://opsweb.phmsa.dot.gov/Pipelineforum/dot-action/index.html.
[3] Federal Energy Regulatory Commission. "Cost Recovery Mechanisms for Modernization of Natural Gas Facilities." FR Doc. 2014-28015. 2014. http://www.federalregister.gov/articles/2014/11/26/2014-28015/cost-recovery-mechanisms-for-modernization-of-natural-gas-facilities.
[4] http://opsweb.phmsa.dot.gov/Pipelineforum/dot-action/index.html.
[5] A.R. Brandt et al., "Methane Leaks from North American Natural Gas Systems", *Science,* Vol 343, 14 February 2014, at 733-35.

after considering public safety aspects, prioritize its $905 million, 3 year pipeline replacement program using methane emissions/leak size data gathered by EDF using cutting edge leak quantification methodology. With this, New Jersey has become the first state in which a major utility is directly connecting data on methane emissions size to the implementation of a system modernization program, thereby maximizing the economic and environmental returns per dollar invested.

The leak survey and quantification methodology used by EDF to gather methane emissions data allowing PSE&G to prioritize its expenditures for leak prone infrastructure replacement derives from a unique project managed by EDF. As part of this project, sensors attached to Google Street View cars are used to detect and quantify methane leaks from local distribution systems (the "mapping project")[6]. The project uses new, advanced laser-based mobile mounted leak detection technology, which enables the efficient detection of leaks across large areas in relatively short periods of time, paired with an algorithm developed by researchers at Colorado State University, which facilitates the cost-effective and efficient quantification of leaks. The data collected by the cars is being used to create detailed maps of areas where natural gas is leaking from utility pipelines and the approximate amount of gas being emitted as of the time of EDF's survey. This information can inform the extent of need for utility investment for infrastructure repairs and/or replacement, and be used to prioritize areas most in need of such expenditures.

3. Implications for the EMP

EDF is engaging with utilities and participating in regulatory proceedings across the country, both in New Jersey and beyond, in order to highlight the benefits of using cutting edge leak detection technology and leak quantification to prioritize leak repair and pipeline replacement efforts, and ensure that utilities are using the most effective and beneficial technological solutions available as part of their leak management efforts. In order to advance these outcomes, the EMP must consider ways to accelerate the adoption of beneficial, cutting edge technology, such as advanced leak detection and leak quantification, by New Jersey utilities at scale.

Along similar lines, New Jersey must consider ways to ensure that utilities use best practices as part of their leak management efforts. Best practice includes, for instance, the prioritization of leak repair and pipeline replacement activities using leak size/emissions data, in addition to consideration of public safety aspects, and more frequent leak surveys than are currently required or implemented by utilities in New Jersey and elsewhere in the country. California has passed a new legislation, SB 1371[7], directing the development and use by utilities of best practices for leak surveys, patrols, leak survey technology, leak prevention, and leak reduction. EDF is participating in a regulatory proceeding before the California Public Utilities Commission aimed at developing rules to implement SB 1371, in which it is advocating for leak quantification to be recognized as a best practice under SB 1371, to be integrated by all California utilities into their regular leak management efforts. To minimize the harmful impacts of natural gas leaks on ratepayers, the environment and public safety, the EMP must consider ways to advance the use of best practice by New Jersey utilities as part of their leak management efforts.

Respectfully submitted,

Mary Barber
New Jersey Director, Clean Energy

N. Jonathan Peress
Air Policy Director, Natural Gas

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[6] http://www.edf.org/climate/methanemaps.
[7] Bill text available at http://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=201320140SB1371.

State of New Jersey
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CHRIS CHRISTIE
Governor

KIM GUADAGNO
Lt. Governor

STEFANIE A. BRAND
Director

December 4, 2015

Via Hand Delivery
Irene Kim Asbury, Secretary
New Jersey Board of Public Utilities
44 South Clinton Avenue, 9th Floor
Post Office Box 350
Trenton NJ 08625-0350

Re: 2015 New Jersey Energy Master Plan Update
Rate Counsel Comments on Draft Update

Dear Secretary Asbury:

Enclosed for filing please find an original and ten copies of the Division of Rate Counsel's Comments concerning the Draft Update to the 2011 New Jersey Energy Master Plan that was released for public comment on November 20, 2015. These comments will also be circulated electronically to the email list server (EMPupdate@bpu.state.nj.us) used by the Board for this filing.

We have also enclosed one additional copy of the materials transmitted. Please stamp and date the copy as "filed" and return to our courier. Thank you for your consideration and attention to this matter.

Respectfully submitted,

STEFANIE A. BRAND
DIRECTOR, DIVISION OF RATE COUNSEL

By: Sarah H. Steindel
Sarah H. Steindel
Assistant Deputy Rate Counsel

c: Service List (via electronic e-mail distribution list)

2015 ENERGY MASTER PLAN UPDATE
DIVISION OF RATE COUNSEL COMMENTS
ON NOVEMBER 2015 DRAFT UPDATE
DECEMBER 4, 2015

The Division of Rate Counsel ("Rate Counsel") is pleased to submit comments on the draft Update (the "Draft Update") to the 2011 New Jersey Energy Master Plan ("EMP") that was issued for comment on November 20, 2015. Rate Counsel previously submitted comments in this matter on August 24, 2015 in response to a Notice issued by the Board of Public Utilities ("BPU") on July 22, 2015. Rate Counsel will not repeat the comments included in its August 24, 2015 submission, which remain in the record of this proceeding. The comments below will address the additional issues identified in Rate Counsel's review of the Draft Update.

I. Driving Down the Cost of Energy

Initially, Rate Counsel wishes to re-iterate the importance of maintaining energy costs at levels that are affordable for the State's residents and businesses. The Draft Update, at page 1, states that "the impact of energy costs on New Jersey's economy must be balanced with the economic benefits offered by the energy sector," and further cites the economic activity resulting from the operations and capital investments being undertaken by New Jersey's seven investor-owned energy utilities. Rate Counsel recognizes the importance of the New Jersey's energy utilities and energy infrastructure to the State's economic well-being. Nevertheless, it is important to be mindful of the impacts of utility rate increases when considering enhancements to the State's energy infrastructure.

Any rate rate increases needed to fund infrastructure improvements will lead to a certain level of negatives economic impacts. This is because the households and businesses that pay the increased rates will have less money for other expenditures. As Rate Counsel has noted in other proceedings before the BPU, rate increases have a negative impact on residential customers, and

can also adversely affect a broad set of industry sectors, particularly those that are intensive users of energy.[1] Thus, it is important to assure that costly infrastructure upgrades are justified based on a careful analysis of their costs and benefits. Infrastructure enhancements should be undertaken only based on a demonstration that they are necessary and beneficial for the State's economy overall.

Additionally, the Draft Update appears to overstate the extent to which New Jersey's electricity and natural gas costs have decreased since 2011. With regard to electric costs, the Draft Update states that residential electricity costs have declined by more than 3 percent since 2011.[2] Rate Counsel was unable to confirm this number. According to the Energy Information Administration ("EIA") Electricity Data Browser, which is cited in the Draft Update, the average 2011 residential electricity rate in New Jersey was 16.22 cents per kilowatt-hour, while the average 2015 year-to-date price through August 2015 is 15.98 cents per kilowatt-hour. This is only a 1.5 percent decrease. Further, this data does not include the impact of the PJM Capacity Performance transitional auctions, which will result in significant increases in retail electric rates. The final EMP Update should include the specific supporting data and calculations for the price comparisons that are presented, and should also take account of the expected impact of the Capacity Performance transitional auctions, as well as the continued impact of Capacity Performance moving forward.

With regard to natural gas costs, the Draft Update states that that New Jersey's natural gas prices were 17th highest in the nation in 2011, while today the State's gas prices are 46th

[1] I/M/O the Petition of Public Service Electric and Gas Company for Approval of the Energy Strong Program, BPU Dkt. Nos. EO13020155 and GO13020156, Prefiled Direct Testimony of David I. Dismukes, PhD on Behalf of the Division of Rate Counsel, p. 21-23 (Oct. 28, 2013).
[2] Draft Update, p. 3.

highest.[3] Rate Counsel was able to confirm that New Jersey's rank for residential natural gas prices in January through August 2015 ranged from 42nd to 50th. However, the rank of 17th for 2011 appears inaccurate unless it is based on the selective use of data for two months that are not representative of the entire year. According to EIA data New Jersey had the 16th and 17th highest residential gas prices in January and February of 2011, respectively. For the remaining months, however, New Jersey's rank ranged from 22nd to 39th.[4] The final EMP Update should present an analysis that is more reflective of overall trends since 2011, and should include specific sources for the data used in that analysis.

II. Electric Usage, Savings and Emissions Data

The Draft Update at pages 8-10 presents information on electric energy and demand savings, and on historical and projected electricity usage that is difficult to verify because the Draft Update does not include sufficient information about the underlying data. The final EMP Update should include additional information as discussed below.

Pages 8-9 of the Draft Update present data on electric energy and peak demand savings resulting from the New Jersey Clean Energy Program's ("NJCEP's") programs. The notes to the figures appearing on page 9 state that the data is based on a database maintained by NJCEP. While this may be the best available data on the savings resulting from NJCEP's program, it is not clear how accurate it is, because it is not clear to what extent the savings data have been independently evaluated and verified. To the best of Rate Counsel's knowledge, there has been no comprehensive independent evaluation of the NJCEP data. Also, NJCEP has not conducted any program-specific impact evaluations studies, which would assess the actual results of those programs, since 2009. The final EMP should more clearly indicate the basis for the energy and

[3] Id.
[4] EIA Natural Gas Data Browser, Residential Price data series, available at: http://www.eia.gov/dnav/ng/ng_pri_sum_a_EPG0_PRS_DMcf_m.htm

peak demand savings, and explain the status of efforts to verify the assumptions used to estimate the savings resulting from NJCEP's programs.

The figure appearing at page 10 of the Draft Update presents historic and projected electricity usage, both with and without the impact of energy efficiency programs. The basis for the projected usage data shown on the figure is unclear. The figure shows a significant decline in consumption from 2016 through 2020, which is said to be based on an "EIA growth rate." However the figure does not cite a specific source for this "growth rate." Moreover, the projected decline in consumption appears inconsistent with EIA's 2015 Annual Energy Outlook, which projects almost no change in consumption during this time period.[5] The final EMP Update should provide more specific sources for the data presented, and should explain the basis for the projected decrease in energy consumption starting in 2016.

III. Natural Gas and Electric Vehicles

The Draft Update states at page 11 that "Battery Electric Vehicles (BEVs), Plug-in Hybrid Electric Vehicles (PHEVs), and natural gas heavy duty vehicles have the potential to increase energy efficiency and reduce emissions in the transportation sector." While this statement appropriately recognizes that there is only a "potential" to increase energy efficiency and reduce emissions, it does not adequately reflect the complexity of the issues that must be considered in forming the State's policies regarding these types of vehicles. Promoting natural gas and electric vehicles may or may not increase energy efficiency and reduce emissions.

Replacing conventional vehicles with natural gas vehicles may reduce some types of tailpipe emissions and thus could contribute to reducing local air pollution.[6] However, natural

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[5] U.S. EIA Annual Energy Outlook 2015, Table 2.2 , Mid-Atlantic (April 2015), available at http://www.eia.gov/forecasts/aeo/index.cfm#supplement

[6] U.S. DOE Alternative Fuels Data Center (2015, June). Natural Gas Vehicle Emissions. http://www.afdc.energy.gov/vehicles/natural_gas_emissions.html

gas heavy duty vehicles are unlikely to increase energy efficiency or reduce greenhouse gas emissions ("GHGs") compared to conventional heavy duty vehicles:

- A 2010 study by the National Renewable Energy Laboratory found that transit buses, school buses, and heavy-duty refuse trucks powered by natural gas all have fewer miles per diesel gallon equivalent than their conventional diesel counterparts.[7]
- On a lifecycle basis, replacing diesel vehicles with natural gas vehicles is not likely to reduce GHGs given the potential significant methane leakages associated with current natural gas extraction methods.[8]

Literature on electric vehicles and their emissions show mixed results depending on the scope of the studies. According to U.S. DOE's GHG emissions calculators for electric vehicles, an average BEV in New Jersey emits 63 percent fewer GHGs per mile than a conventional vehicle, and a typical PHEV emits 56 percent fewer GHGs than a gasoline car.[9] However, a recent working paper published by the Energy Institute at Haas suggests that replacing conventional vehicles with electric vehicles in New Jersey may result in an increase in GHG emissions or no meaningful reduction largely due to emissions increases associated with (a) manufacturing and maintenance of the vehicle over its lifetime, (b) adverse impacts of climate on the efficiency of electric vehicles, and (c) an increase in driving resulting from the lower operating costs of BEVs.[10] In addition, another study found that replacing a gasoline vehicle with a BEV today increases monetized environmental health impacts by 80 percent assuming that the BEV is supplied by today's electricity mix (implying that BEV emissions would be based on average grid emission rates). This is primarily because the coal-fired power plants that

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[7] Johnson, C. (2010). National Renewable Energy Laboratory. Business Case for Compressed Natural Gas in Municipal Fleets. http://www.afdc.energy.gov/pdfs/47919.pdf

[8] Brandt, A.R. et al (2014). Methane Leaks from North American Natural Gas Systems. Science 343. http://www.sciencemag.org/content/343/6172/733.summary

[9] U.S. DOE Alternative Fuels Data Center (2015, September). Emissions from Hybrid and Plug-In Electric Vehicles. http://www.afdc.energy.gov/vehicles/electric_emissions.php

[10] Archsmith et al. (2015). From Cradle to Junkyard: Assessing the Life Cycle Greenhouse Gas Benefits of Electric Vehicles. https://ei.haas.berkeley.edu/research/papers/WP263.pdf

supply a significant percentage of the electricity used by current BEVs are major emitters of harmful particulate matter.[11]

Careful analysis will be required as to develop the State's policies regarding natural gas and electric vehicles. The final EMP Update should include information on the analysis that will be required.

IV. Smart Grid, Grid Automation and Automatic Metering Infrastructure

The Draft Update includes a proposed modification to the 2011 EMP goal of "Evaluat[ing] Dynamic pricing and Metering:

> While no change in the 2011 EMP goal is recommended, the focus of this goal should include distribution automation and smart grid and not just smart meters. The development of distribution automation/smart grid can lead to the development of smart meters. The BPU will work with the four EDCs and other interested stakeholders to evaluate the future development of advanced technologies within the context of smart grid and distribution automation plans. In addition progress in this goal can assist in the development of new DG and microgrids as well as advancing EE and demand reduction.[12]

Rate Counsel supports the proposed modification, which recognizes that the State can move forward with smart grid and distribution automation ("SG/DA"), but can await further study before moving to widespread installation of "smart meters."[13] Rate Counsel supports the development of cost-effective SG/DA systems to improve the reliability and resiliency of the States' electric grid, subject to careful analysis to assure that all investments are cost beneficial and prudent, and are consistent with the State's overall energy strategy. The benefits of smart meters and dynamic pricing are not as clear. As Rate Counsel has explained in other proceedings, smart meters have only a tenuous connection to reliability and resiliency, may not be cost-justified for ratepayers in general, and can have detrimental impacts on individual

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[11] Tessum et al. (2014). Life Cycle Air Quality Impacts of Conventional and Alternative Light-Duty Transportation in the United States. PNAS 111(52). http://www.pnas.org/content/111/52/18490.full.pdf

[12] Draft Update, p. 38.

[13] Id.

ratepayers.[14] As stated in the Draft Update, work remains to be done to evaluate the costs and benefits of smart meters, as well as other issues including security and standardization, before any decision is made to install them on a widespread basis.[15]

V. Resiliency and Emergency Preparedness

With regard to resiliency and emergency preparedness, the Draft Update omits an important element. As Rate Counsel noted in comments filed in this matter on August 24, 2015, the June 23, 2015 storm that affected the Atlantic City Electric Company ("ACE") service territory highlighted the utilities' dependence on the State's telecommunications infrastructure to carry out necessary communications with both customers and field personnel during an outage. The EMP Update should reflect the lessons learned in the aftermath of the June 23, 2015 storm event, particularly with regard to the impact of telephone and wireless communication outages on ACE's restoration efforts. While the Draft Update includes a recommendation to investigate new technologies to keep customers informed, it does not include a broader recommendation to find ways to deal with landline and wireless outages after a severe storm. As stated in Rate Counsel's August 24, 2015 comments, this effort requires the attention of the State's telecommunications and wireless industries, in addition to the utility initiatives recommended in the Draft Update.

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[14] See I/M/O the Verified Petition of Rockland Electric Company for Establishment of a Storm Hardening Surcharge BPU Dkt. No. ER14030250, Prefiled Direct Testimony of Tim Woolf on Behalf of Division of Rate Counsel (Sept. 4, 2015).

[15] Draft Update, p. 38.

NJ	ADVANCED ENERGY NEW JERSEY
The Voice of New Jersey's Clean Energy Industry	

COMMENTS ON DRAFT NEW JERSEY 2011 ENERGY MASTER PLAN UPDATE
Submitted December 4, 2015
by Advanced Energy New Jersey

Advanced Energy New Jersey (AENJ) represents over 160 New Jersey businesses involved in the energy efficiency and renewable energy industry. The Draft New Jersey 2011 Energy Master Plan Update makes some strides in supporting the renewable energy and energy efficiency industry in New Jersey however to keep pace with other states, New Jersey could be doing more.

Expand In-State Electricity Resources
AENJ supports the recommendation in the EMP Update to reduce the financial, regulatory and technical barriers to encourage new DG of all forms and expand the use of CHP. The NJBPU should allow for the development of additional local micro-grids that will expand in-state electricity resources and provide critical energy resiliency.

Cost Effective Renewable Resources
We are pleased that the Plan maintains the commitment to the EDC's solar programs and will continue to promote solar photovoltaic installations. According to The Solar Foundation, 2014 National and State Solar Jobs Census, New Jersey has more than 519 companies working in the solar industry that are employing more than 7,200 people. It is vitally important to encourage the continued growth of this industry in New Jersey both for the environmental benefits of the alternative power source and for the significant economic benefits.

In addition, we appreciate the support for offshore wind, tidal power, and biomass alternative energy solutions but look to the State to do more on these renewable energy resources.

Promote Cost Effective Conservation and Energy Efficiency
AENJ supports incentives for geothermal heat pumps and would recommend maintaining programs that are similar to those that promote solar installations in an effort to reduce the cost. We support the Plan's recommendation to increase the energy efficiency of State-owned properties and would like to see this promoted more aggressively to local governments for use on their properties. AENJ recommends more education and outreach made to local governments regarding the variety of ways currently available to make a building more energy efficient. New technology makes it possible to reduce the carbon footprint and the operating costs of a facility without necessarily requiring major investments.

Submitted by:
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atlantic city electric

A PHI Company

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December 4, 2015

VIA ELECTRONIC MAIL
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RE: Comments of Atlantic City Electric Company on Updates to 2011 Energy Master Plan

Dear Secretary Asbury:

On behalf of Atlantic City Electric Company ("ACE" or the "Company"), please accept these comments in connection with the New Jersey Board of Public Utilities' (the "Board") update to the 2011 Energy Master Plan ("EMP"). The Company appreciates the opportunity to participate in this initiative and values the open and constructive way in which the Board has solicited public input. Please note that ACE, as a member of the New Jersey Utilities Association ("NJUA"), has also joined in comments that were filed by NJUA's President and Chief Executive Officer on August 13, 2015. The suggestions and policy recommendations offered in this letter are *in addition to* the comments reflected in that document as well as the comments filed by ACE on August 24, 2015..

ACE respectfully requests that the Board consider the following:

Smart Meters

In addition to the comments provided by ACE regarding Smart Meters on August 24, 2015, ACE's ultimate parent, Pepco Holdings, Inc. ("PHI") is pleased to furnish additional details regarding customer benefits and operational efficiencies achieved in PHI's other jurisdictions in support of the Board's evaluation of its smart meter policy.

Some of these additional benefits and operational efficiencies include:

- Reduction in Manual Meter Reading Costs
- Reduction in Off-Cycle Meter Reading Costs
- Avoided Capital Costs Related to Legacy Meter Replacements
- Improved Billing Activities
- Reduction in Load Research Meter Costs
- Improved PJM Market Settlements
  - Increased Accuracy of Energy and Capacity Settlements for All Market Participants
- Remote Connect/Disconnect Capability
  - Reduction in Costs Related to Move In/Move Out, Seasonal Occupancy, Bad Debt
  - Reduction in Time Required for Reconnects
- Improved Customer Complaint Handling
- Avoided Truck Rolls
  - Single Lights Out
  - Storms
- Improved Operation of Electric Distribution Assets and Improved Reliability
- Improved Theft Detection
- New Energy Management Tools That Provide Customers with Detailed Energy Use Data Allowing Customers to Better Manage and Reduce Their Electricity Use
- Support for:
  - Innovative Pricing Programs That Reduce Customer Energy and Demand During High Cost Periods
  - Planning and Evaluation of Demand Side Management Programs
  - Microgrids
  - Prepaid Programs That Assist Customer to Better Manage Their Electricity Costs
  - Integration of Distributed Generation
  - Integration of Plug-In Vehicles
  - Conservation Voltage Reduction Programs
  - Third Party Suppliers Through the Provision of More Detailed Customer Usage Data

ACE can provide additional information regarding customer benefits and operational efficiencies upon request.

The Company's support of AMI will also provide additional opportunities and benefits through demand response programs reported by the United States Department of Energy as follows:

- **Fostering Price-Based Demand Response.** By making available time-varying pricing plans that let customers take control of their electricity costs. More efficient pricing of retail electricity service is of the utmost importance.

- **Improving Incentive-Based Demand Response.** Broaden the ways in which load management contributes to the reliable, efficient operation of electric systems. Incentive-based demand response programs can help improve grid operation, enhance reliability, and achieve cost savings.

- **Strengthening Demand Response Analysis and Valuation.** Program designers, policymakers, and customers can anticipate demand response impacts and benefits. Demand response program managers and overseers need to be able to reliably measure the net benefits of demand response options to ensure that they are both effective at providing needed demand reductions and cost-effective.

  Integrating Demand Response into Resource Planning. This will ensure that the full impacts of demand response, and the maximum level of benefits, are realized. Such efforts help establish expectations for the short- and long-run value and contributions of demand response, and enable utilities and other stakeholders to compare demand response options with other alternatives.

- **Adopting Enabling Technologies.** To realize the full potential for managing usage on an ongoing basis given innovations in communications, control, and computing. Innovations in monitoring and controlling loads are underway, offering an array of new technologies that will enable substantially higher level of demand response in all customer segments.

As stated in previous comments, the Company strongly encourages strengthening of the Smart Metering language presently in the EMP. ACE respectfully suggests replacing the existing language regarding smart meters with "New Jersey should support the deployment of smart meters and associated cost recovery for utilities in order to encourage wiser energy use and reduce retail prices for all residents."

Cost Effective Renewable Resources

ACE supports New Jersey's efforts to increase the use of solar consistent with the Solar Act of 2012. ACE has experienced tremendous growth in solar applications. In 2004, the Company processed 87 solar applications. ACE has processed 6,600 total applications through 2014; most are installed and interconnected. The Company is projecting to process an additional 7,900 applications in 2015. As a result of this growth, ACE has experienced a shift in costs borne by non-participants in New Jersey's solar market. The Company respectfully submits that the EMP should address this cost shift.

Microgrids

ACE supports the Board's assessment that microgrids and distributed generation can enhance the resiliency of the grid in certain targeted areas and applications. Having back up or even primary source generation, such as combined heat and power ("CHP"), for critical public buildings and campuses, such as hospital, public shelter or emergency response facilities, is very sensible. Distribution companies can work with those customers to ensure that the microgrid has the proper equipment necessary to isolate the facility from the rest of the grid during emergencies and to allow the sale of any distributed generation not needed by the facility over the grid. Microgrids that span property boundaries and are integrated into the distribution grid can also play a role in the resiliency of a community. The Company therefore supports the EMP's recommendation to study the development and deployment of these more advanced microgrids. There has been some willingness to site a microgid in the City of Atlantic City. ACE's initial comments filed on August 24, 2015 touch on some of the issues that should be studied; they need not be reiterated here.

In addition to the comments that were filed on August 24, 2015, ACE also notes that widespread installation of full microgrids would be very expensive and potentially cost prohibitive. One low-cost option that might merit inclusion in the EMP is the development of tariffs allowing an electric distribution company ("EDC") to provide pre-wiring equipment to customers that would allow quick connection of mobile generation units to a building or complex providing critical community resiliency functions during an emergency. The Board could also allow EDCs to hold in rate base mobile generator sets that could be deployed to those pre-wired facilities. The overall cost of such a plan is relatively low, but would provide extremely important service to community shelters, fire, and police stations and similar facilities without the expense of fixed distributed generation at each community resiliency location and would allow for the emergency response to numerous more locations than could be justified for a full scale microgrid installation.

Infrastructure Resiliency

ACE supports the initial comments filed by the NJUA on August 13, 2015 regarding Energy Distribution System Infrastructure Resiliency and the EMP updated comments appearing at the top of page 48.

Other Comments

The Company notes a correction in the Company's goals on page 49 in the "Improve and Enhance the EDC Smart Grid and Distribution Automation Plans" section of the report. As stated in its submission to BPU-65 and summarized in section 5.3.3 of GE Energy Consulting's Final Report, the automated sectionalization and reclosure ("ASR") work was to be performed on 33 feeders through 2014 with 19 feeders identified through the following year and a similar number of feeders going forward until all targeted feeders are equipped with ASR. For the sake of clarity, the ASR work will be performed on the feeders, as opposed to the substations.

ACE appreciates the opportunity to work with the Board and other interested parties to help shape an updated EMP that thoughtfully considers ever-evolving technological developments in utility operations and reflects the economic realities faced by the utility community and its customers. We thank you for your consideration and are available to share our input and experience.

Respectfully submitted,

/jpr

Philip J. Passanante
An Attorney at Law of the
State of New Jersey

New Jersey Business & Industry Association

NJBIA

Melanie Willoughby
Chief Government Affairs Officer

Frank Robinson
Vice President
Grassroots & Government Affairs

Mary Beaumont
Vice President
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Sara Bluhm
Vice President
Environment & Energy

Andrew Musick
Director of Taxation & Economic Development

Nicol Nicola
Director
Economic Research

Tyler Seville
Associate Director
Education & Workforce Development

Michael Wallace
Director
Employment, Labor & Federal Affairs

TO: President Mroz, Commissioners Chivukula, Fiordaliso, Holden, and Solomon

FR: Sara Bluhm, Vice President, Energy & Environment

DATE: December 4, 2015

RE: NJBIA Energy Master Plan Update comments

On behalf of the New Jersey Business & Industry Association's (NJBIA) 20,000 member companies, we appreciate the opportunity to provide our comments on the New Jersey Energy Master Plan (EMP) Update released November 2015. As business ratepayers are the majority consumer of energy, we have a vested interest in the policies of the state.

NJBIA appreciates the continued recognition that energy production and use, economic growth and environmental protection are tied together. As our state continues to strive for a healthy competitive business climate, energy plays a critical role in business decision making. The plan demonstrates that the increase in natural gas production and consumption has had an impact on the price of energy in New Jersey. Natural gas has allowed for the decrease in the cost of energy and air emissions. This is a positive for both the economy and the environment. Additional efforts to support retrofitting of generation facilities and availability of stock should be explored. NJBIA also is supportive of alternative fuel pilot programs and encourages the exploration of Clean Energy Program dollars being made available for companies wishing to retrofit fleets or install fueling stations.

The Association recognizes the balanced portfolio approach has a diverse fuel mix, but business needs baseload power to insure reliable service. Given the recent EPA Clean Power Plan, nuclear must remain in the policy discussion for future development along with new natural gas generation. We appreciate the Board's recognition that ratepayer risks must be balanced with policy goals.

The state has been a leader in solar power but this has also been funded by the ratepayers of the state. Since all of the solar renewable energy to meet the solar RPS is currently being provided by in state sources and the drop in solar installation costs continue, NJBIA agrees that the state needs to constantly monitor the policies that support solar. The goal from the beginning of RPS was to spur a marketplace and we have achieved that.

Close to $5 billion has been invested by ratepayers to improve our environment, energy systems and economy. Ratepayers have spent $2 billion through state energy efficiency and renewable programs since 2001 and an additional $727 million from 2009-2015 on utility sponsored energy efficiency programs. The cost to ratepayers for solar rebates was $910.5 million through the solar RPS and does not include net metering incentives. Additionally from 2009-2015, New Jersey ratepayers through the EDC solar programs have invested $1.45 billion.

NJBIA has called for program evaluation for many years and is supportive of the recommendation to see which programs are effective and who should administer them. The Association also continues to ask for a reduction in the Societal Benefits Charge as a way to further reduce costs to ratepayers. Furthermore, we reassert our ask of the Board to direct the Clean Energy Program to change policies to allow for changes in energy efficiency programs that would serve the commercial and industrial real estate markets. Currently, tenants in commercial office buildings are not eligible for rebates or incentives unless they are directly billed by the utility. There is a potential to save on energy, money, emissions, and transmission upgrades if the Board addressed how to upgrade commercial real estate holdings. Additionally, NJBIA requested that educational dollars be utilized to help train brokers on how to negotiate leases with energy efficiency measures; how to build in energy efficiency into regular maintenance for landlords and simpler rebates for equipment where the BPU can purchase at lower rates like they do for lightbulbs.

As the state continues to invest in resiliency, NJBIA also recommends that the utilities have dedicated staff to help business customers during outages. While the technology upgrades such as Apps and Facebook to report outages is helpful, larger users can better plan for workforce returns if they have tighter windows on restoration expectations. Additionally, there are many businesses in New Jersey that serve the greater good but may not be deemed essential such as a grocery store, a pharmacy or a hardware store. During times of crisis, business provides for many basic services and commodities. Having more communication with our utilities would allow for other sectors of the economy to know when we can resume operations in many workforces.

NJBIA has been supportive of CHP for business and has recognized some impediments over the years have prevented many companies from installing these systems, with the greatest burden being cost. Streamlined permitting, upfront incentive payments and consistency of application are all things that we support.

The Association appreciates the opportunity to comment and looks forward to working with the Administration to continue to lower the cost of energy for ratepayers, improve our economic competitiveness and help the environment.

December 4, 2015

On behalf of the New Jersey Energy Coalition's (Coalition) member companies and organizations, the Coalition would like to congratulate the Christie Administration, particularly the New Jersey Board of Public Utilities and the New Jersey Department of Environmental Protection, for their outstanding efforts in updating the 2011 Energy Master Plan. We are particularly encouraged by the BPU's efforts to-date in promulgating increased regulatory certainty for infrastructure investments, renewed emphasis on delivery system resiliency, as well as the Board's continued support for nuclear power generation.

We are pleased to see that a number of the recommendations submitted by the Coalition during the comment period have been addressed in the draft document. There are a number of our recommendations, however, for which we would like to re-emphasize our support before the updated EMP text is finalized and the document is released. Specifically:

- Promote regulatory certainty that would enable energy delivery companies to efficiently deploy capital investment in infrastructure and delivery system reliability and resiliency. Subject to the BPU's oversight and prudency review, create long-term financing mechanism for addressing large scale infrastructure investments that would provide more financial certainty from a planning perspective, a steadier and more predictable utilization of workforce and supply chain resources, all with long-term benefits to the state's ratepayers and consumers.

- Prominently note NEW nuclear energy's central role in meeting the state's environmental and economic objectives. This is particularly important in light of the scheduled shutdown of Oyster Creek nuclear plant in 2019. New nuclear power will greatly assist the state in meeting its Clean Air requirements.

- Lastly, there should be prominent note made of the need for long-term commitment to clean burning natural gas. Connectivity to proven supply sources located in our market area should be encouraged and leveraged to help hold down or reduce energy prices for the state's ratepayers and consumers.

In closing the Coalition again wishes to express our appreciation to the BPU for the opportunity provide input to this critical document. The Coalition and its members are key stakeholders in the vital mission of improving energy delivery to New Jersey's residents and we welcome the opportunity to assist the BPU in improving the EMP.

Thank you for your consideration.

Rich Jackson

Executive Director

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December 4, 2015

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PSEG
Services Corporation

December 4, 2015

VIA ELECTRONIC DELIVERY

Irene Kim Asbury, Secretary
New Jersey Board of Public Utilities
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COMMENTS OF THE PSEG COMPANIES[1]
ON THE DRAFT 2015 ENERGY MASTER PLAN UPDATE

PSEG appreciates the opportunity to submit written comments to the New Jersey Board of Public Utilities ("Board") on the November 20, 2015 release of the State's 2015 Energy Master Plan ("EMP") Update to the 2011 EMP ("2015 EMP Update").

PSEG has a long history of partnership with the State and aligning its interests with those of New Jersey. We agree with the conclusion of the 2015 EMP Update that, although there is certainly more work to be done, New Jersey is making good progress toward achieving its EMP goals — supporting investments in infrastructure to harden and modernize the electric and gas distribution systems, lowering costs to consumers, promoting energy efficiency and energy conservation, and supporting renewable energy, particularly cost-effective utility-scale projects on landfills and brownfields to maximize their beneficial use.

Regarding the overarching EMP objective of lowering energy costs, since 2009, PSE&G residential gas bills are down 55% because of the lower cost of natural gas supply, and electric bills since 2009 are slightly lower as well. We agree with the Board's recommendation to focus on infrastructure investment to improve energy resiliency, emergency preparedness and response. Infrastructure investments that enhance the reliability and resiliency of the electric and gas systems will benefit all customers and create jobs for years to come.

PSEG has supported, and looks forward to continuing to support, the EMP's goals of making energy accessible, reliable, and affordable, maintaining a balanced portfolio of clean

[1] The PSEG Companies, or PSEG, are Public Service Electric and Gas Company ("PSE&G"), PSEG Power LLC ("PSEG Power"), and PSEG Energy Resources & Trade LLC ("PSEG ER&T").

generation resources, delivering the economic and environmental benefits of energy efficiency, and supporting new energy technologies and renewable energy investments.

PSEG highlights six (6) key elements within the 2015 EMP Update, and recommends necessary enhancements that should be incorporated to effectively ensure the success of the Update:

(1) Regulatory Reform to Effectively and Efficiently Facilitate Investment in Infrastructure and Resiliency

PSEG agrees that "[t]he State should continue to support infrastructure hardening or preparedness applications of the utility companies as long as financially prudent." (2015 EMP Update at 48). This important goal raises the question of how best to effectively manage the recovery of costs for large scale infrastructure investments in a way that ensures financially prudent projects are successfully completed while minimizing customer rate impacts.

It is estimated that the average annual cost of power outages nationwide caused by severe weather events is between $18 billion and $33 billion per year,[2] and in a year with severe storms, the costs would be much higher.[3] PSE&G has already begun to address the need for a more resilient electric and gas system with its Energy Strong Program. In addition to creating and sustaining significant jobs to bolster the state's economy, Energy Strong is making the PSE&G electric system more resilient by better protecting many of the substations impacted by recent storms, making our grid smarter with new technologies, and adding redundancy to the grid as well.

Both Energy Strong and the recently approved Gas System Modernization Program ("GSMP") also will begin to address our gas system on a large scale basis. PSE&G will be replacing older gas mains with new resilient materials, which will reduce methane emissions caused by leaks in the older infrastructure, reducing greenhouse gas emissions by an equivalent of 38,000 tons of CO2 a year. GSMP investment will also support increased use of natural gas for traditional applications, modern high efficiency gas appliances, and emerging technologies such as fuel cells, combined heat and power equipment, and compressed natural gas vehicles.

The 2015 EMP Update should include support for implementation of programs and regulatory cost recovery mechanisms that enable New Jersey energy companies to most effectively and efficiently meet this goal. Specifically, the Update should recognize the need for regulatory reform that would create a more standardized, long-term process for making large scale infrastructure investments that focus on resiliency, modernization and preparedness, including the accelerated replacement of old gas mains. Utilities and their customers would benefit from more predictable, longer term programs, which will: (a) provide for more efficient

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[2] *Economic Benefits of Increasing Electric Grid Resilience to Weather Outages* (August 2013), p. 3. The report was prepared by the President's Council of Economic Advisers and the U.S. Department of Energy's Office of Electricity Delivery and Energy Reliability, with assistance from the White House Office of Science and Technology, http://energy.gov/sites/prod/files/2013/08/f2/Grid%20Resiliency%20Report_FINAL.pdf.

[3] *See ibid.* at p. 3, finding that the cost estimates related to Sandy ranged from $27 billion to $52 billion nationally.

planning that maximizes expenditure efficiencies; (b) enable utilities to establish hiring programs and improve workforce management and employment; (c) provide opportunity to build supply chain in New Jersey through larger, longer-term orders; and (d) increase regulatory economy, while still providing regular oversight of all spending. In this regard, PSEG also echoes the comments by the New Jersey Utilities Association, recommending that the 2015 EMP Update include direction for the Board to continue to consider, where appropriate and with utility input, the implementation of innovative cost recovery mechanisms for infrastructure investment that allows the utility recovery of investments as they are made.

Accordingly, now is the time to address this aspect of the State's policy support for infrastructure hardening and resiliency given, as the 2015 EMP update notes, the dramatic decline in gas prices, the availability of labor and the relatively low cost financing environment to support these large scale projects. (2015 EMP Update at 3). A clear, long-term approach to ensure that essential infrastructure and resiliency work is completed, rather than restarting a negotiation about these investments every few years, better facilitates the Administration's goal to promote economic development, create jobs, and ensure reliability.

(2) Recognition that Competitive Markets Have Proven Capable of Ensuring the Development of Diversified Clean Conventional Generation

Following from the publication of the 2011 Energy Master Plan ("2011 EMP"), it has been made clear that the competitive market can facilitate investment in low or no-carbon central station power – when and where it is needed and in the most efficient way. As the 2015 EMP Update highlights, it is anticipated that more than 2,000 MW of new clean natural gas generation capacity will be in operation in calendar years 2015 and 2016 alone. The market continues to ensure reliable supply for New Jersey and the whole PJM footprint.

Accordingly, PSEG supports the 2015 EMP Update recommendation to continue to work to assist in reducing financial, regulatory, and technical barriers, provide for opportunities for new entry and enhance the capacity of the natural gas pipeline infrastructure. (2015 EMP Update at 16-18). Well-functioning competitive power markets remain the best way to ensure reliable supply and foster investment in New Jersey. PJM's Reliability Pricing Model and energy markets as well as the Basic Generation Service ("BGS") auction developed by the Board are providing service in a reliable and economic manner to New Jersey customers. PSEG believes that the State has been successful in opening the electric market to retail competition, utilizing the BGS auction for default service, and relying upon the competitive wholesale markets administered by PJM to ensure supply adequacy at competitive prices.

New Jersey has seen new clean natural gas generation developed without customer subsidies, and the market continues to ensure reliable supply for New Jersey and the whole PJM footprint. Notably, the 2015 EMP Update may consider incorporating Sewaren 7 into its list of projects as PSEG is particularly proud to have made the decision to construct this new 540-MW, dual-fuel combined-cycle power plant. Sewaren 7 has cleared PJM's Reliability Pricing Model Base Residual Auction and will be constructed at PSEG Power's existing Sewaren Generating Station site in Woodbridge, New Jersey, replacing Sewaren Units 1, 2, 3 & 4, which will be retired after almost 70 years of providing energy to the region. In repowering an existing generating site, PSEG Power will be able to take advantage of existing infrastructure. Sewaren 7

will represent a major investment in the local and regional economy. The plant will bring significant tax revenue to Woodbridge Township, as well as other economic benefits. The plant will run primarily on natural gas, but also will be able to run on ultra-low-sulfur distillate (ULSD) fuel oil as a back-up, supporting fuel diversity and exceptional dependability. The new plant will be well positioned to supply power for the Capacity Performance market due to its dual-fuel capability and high level of reliability.

PSEG also acknowledges the 2015 EMP Update's continued recognition of the importance of not just new generation, but the continuation of an adequate diversified fuel mix and balanced portfolio of generation resources to meet all energy reliability needs of the state.

The 2015 EMP Update should consider more clearly recognizing how the State's support for competitive markets has yielded New Jersey significant benefits. From competitive supply options for customers (and a reliable default service in BGS), to lower overall energy prices, to new supply resources that bring sustained economic development, significant achievements have been attained by the State through well-functioning, competitive market design supported by the State. The 2015 EMP Update should therefore consider highlighting the benefits achieved when markets are well designed, allowed to work and are supported by State initiatives.

(3) Recognition of Nuclear Energy's Central Role

The 2015 EMP Update properly affirms the importance of nuclear generation to New Jersey's fuel diversity and needs. PSEG agrees with the recommendation that New Jersey remain "strongly committed to the nuclear industry, which has a strong track record in New Jersey of providing safe, reliable, carbon-emission-free electricity." (2015 EMP Update at 20). New Jersey's nuclear facilities provide about 50% of all the power generated in this State, all without harmful pollution or carbon emissions. Because of the State's commitment to nuclear energy, New Jersey has one of the cleanest generating fleets in the nation.

Nuclear energy is also a source of jobs and economic development in the state, not only at its nuclear facilities, but through the local nuclear supply chain as well. There are over fifty companies with facilities in New Jersey that are nuclear suppliers. Areva, Burns & Roe, Day & Zimmerman, Hitachi, Holtec, The Shaw Group and URS Corporation are all companies in the nuclear supply chain and have over 3,700 employees in the State. Most recently, PSEG is pleased to be supporting the State and working with Holtec International to explore small modular reactor design and development.

Throughout this process, a number of stakeholders have commented and requested expansion of the current Class I and Class II REC definitions to include technologies such as combined heat and power, geothermal and other resources that do not meet the current generation source requirement. However, some of these stakeholders have also expressed opposition to nuclear and natural gas generation. It is inconceivable that a discussion around New Jersey's policy on low and no-carbon generation sources would not include nuclear and natural gas as essential to ensuring reliable sources of energy at the lowest costs to consumers. Accordingly, PSEG wholly supports the 2015 EMP Update's recognition of nuclear and natural gas, along with renewables and hydroelectric power, as components of New Jersey's clean energy mix supporting the State's carbon reduction goals.

PSEG is positioned to provide New Jersey with economical and carbon-free electricity from its nuclear plants well into the future. However, the nuclear industry is facing growing challenges from increasing regulatory and safety compliance costs. PSEG recognizes the 2015 EMP Update's support, and looks forward to continued dialogue with respect to how best to continue the path forward for New Jersey's nuclear industry consistent with its support for other emission free resources such as renewable energy.

(4) Continued Commitment to Natural Gas Infrastructure

PSEG agrees with the 2015 EMP Update's continued commitment to the expansion of the existing natural pipeline network that serves gas utilities and power plants throughout New Jersey so long as it is done safely and in compliance with environmental regulations. To ensure the continued access to low-cost gas for customer use and fuel for reliable low-carbon emitting generation, the 2015 EMP Update correctly recommends that the Board should continue to advocate for enhanced intrastate capacity at local levels and interstate pipeline infrastructure before FERC. (2105 EMP Update at 21).

Natural gas infrastructure remains a vital component of New Jersey's energy supply approach. It is undeniable that the availability of affordable energy will make New Jersey more attractive to energy-intensive businesses and thereby aid the state's environmental and economic goals.

(5) Continued Building Upon Solar Development Successes, Particularly on Landfills and Brownfields, While Proactively Looking to Ensure Fair Sharing of Costs

PSEG agrees that "[t]he continuation of the EDC Solar programs is, in effect, an incentive that facilitates participation in the New Jersey solar market by those residents who have been unable to take advantage of individual PV systems." (2015 EMP Update at 25). PSEG believes, however, that the 2015 EMP Update should further articulate that EDC involvement in solar development, particularly on landfills and brownfields, remains a significant component to sustain a long-term solar industry in New Jersey that provides environmental and economic benefits to all ratepayers.

Historically, New Jersey has been successful with solar development because it has implemented a long-term policy framework with specific solar targets. Looking ahead, it is essential to New Jersey's interest in solar growth that all forms of solar energy be further developed, not just net metered solar. Doing so is important because preferences for net metered solar result in there not being a truly competitive solar market in New Jersey, as subsidies from SRECs and net metering flow from those ratepayers who can least afford it to those who are well off and can directly invest in solar.[4] Regarding this concern, MIT recently published a study specifically concluding that net metering programs that pay customers the retail electricity rate shift the cost of maintaining the grid onto customers without rooftop panels, and continued

[4] It has been noted that the median income of those with solar installations on their homes is $120,000, whereas the median income for the average American is $50,000.

reliance on net metering should perhaps be reconsidered.[5] This MIT study also pointed out the obvious economies of scale of larger projects, which would reduce the subsidy required to generate the same amount of carbon free energy.

The 2015 EMP Update recommends that no further action is presently required with respect to solar development. However, while the net metering rate shift issues in New Jersey have not reached the level experienced in Arizona, California and Hawaii, the impact is increasing and likely warrants study. As the impacts of net metering continue to be measured, public utility grid connected solar remains a critical component in making sure everyone benefits from the subsidies and more solar megawatts are built per dollar of subsidy. Moreover, projects to establish solar on landfills and brownfields align this renewable energy source with State policy to find beneficial use for this space, preserve our limited open lands, minimize costs and allocate them fairly.

As the 2011 EMP anticipated, grid-connected landfill and brownfields solar development has created hundreds of jobs, driven additional economic development and, perhaps most significantly, made productive use of underutilized sites while preserving clean farmland. Moreover, this development has been achieved at roughly 60% of the cost of rooftop solar systems with costs and benefits fairly shared among all ratepayers. Undeniably, the 2011 EMP determination that brownfields and landfills are well-suited for the development of large solar generation coupled with EDC involvement in successfully developing solar on these challenging sites while fairly sharing costs and benefits appears to have been borne out. Accordingly, the 2015 EMP Update should clarify the continued commitment to support EDC solar programs on these sites.

The 2015 EMP Update provides an opportunity to successfully report that utility involvement in landfill/brownfield solar development consistent with N.J.S.A. 48:3-98.1 has proven to be instrumental in providing universal access to renewables and energy efficiency, at a lower cost than would otherwise be possible, generating jobs along with green energy. The cost recovery mechanisms approved by the Board for PSE&G's solar investments provide a contemporaneous return on these investments – a feature that provides the necessary incentives to deploy the required capital expenditures. This is the 21st century approach to universal access for consumers and PSE&G very much looks forward to continuing to contribute to solar energy development.

(6) Removal of the Disincentives for Extensive Utility Investment in Energy Efficiency

Energy efficiency is the lowest-cost solution offered in the EMP and also serves to create jobs and promote economic development. New Jersey should continue to promote the use of energy efficiency to meet its energy goals, and utilities can play a critical role in delivering energy efficiency. The EMP should seek to expand energy efficiency initiatives and align the incentives for utilities to deliver energy efficiency to customers.

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[5] See, "The Future of Solar Energy," MIT Energy Initiative (MITEI), dated May 5, 2015, https://mitei.mit.edu/futureofsolar.

As commenters at the public hearings noted, despite the successes in promoting energy efficiency, New Jersey needs to do more and residents and businesses are not investing at anywhere near the rate necessary to take full advantage of energy efficiency opportunities. Although it has been demonstrated consistently that savings associated with energy-efficiency improvements exceed the costs, most consumers are not well-positioned to identify and undertake economically sensible conservation decisions. Because pay-back comes at a future date after the expenditure is made, most consumers – including many small businesses – either do not perceive the value of the investment or are unwilling to devote the necessary capital needed to fund the projects. For many large businesses, energy efficiency projects, even with attractive paybacks, usually lose out to capital investments that more directly impact the business's core mission.

As New Jersey tries to rise up the state rankings for delivering energy efficiency, it is worth noting that of the top 15 states delivering energy efficiency, 13 have their utilities playing a prominent role.[6] Utilities have several advantages to overcome many of the barriers that result in customers' lack of investment in energy efficiency, including brand recognition, trust of customers, use of bills, and patient capital to invest. Utilities are well equipped to perform the role that consumers are failing to perform by promoting energy efficiency and developing energy efficiency projects:

- Utilities have extensive experience in providing energy and constructing facilities – in the case of PSE&G, more than a century of experience;
- Utilities have a highly skilled and dedicated workforce living in the same communities that they serve;
- Utilities have a long track record in deploying capital to achieve social benefits; and
- Utilities have the knowledge and ability to educate the public about how to save energy.

PSE&G has confirmed through its successful energy efficiency programs that it is ideally positioned to promote energy efficiency, house by house, neighborhood by neighborhood. This includes opportunities to bring energy efficiency not only to affluent households but also to urban residents, low-income customers and renters – "universal access" to all customer classes. PSE&G is uniquely positioned to increase penetration across all customer segments by making investments that can be amortized over time as opposed to being expensed in the year the measures are installed.

More clarity on utilities' role delivering energy efficiency would help all parties. Our utility programs have evolved along with changing state policy goals; however, the remaining uncertainty around the utility role means that our energy efficiency business only exists on a filing-to-filing basis. This makes it difficult to plan, staff, and more fully integrate the goal of saving customers energy into the day-to-day business of the utility.

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[6] The 2014 State Energy Efficiency Scorecard, Report Number U1408, American Council for an Energy-Efficient Economy.

Sustained and robust utility involvement in spurring energy efficiency is predicated on regulatory mechanisms that allow utilities to earn a return on these investments and provide for prompt cost recovery. The 2015 EMP Update would benefit further by inclusion of policies to further promote utility involvement in energy conservation and efficiency programs such as those under undertaken by PSE&G to date and which have enjoyed so much success. In particular, the 2015 EMP Update should expressly incorporate the need to initiate the development of regulatory mechanisms that allow utilities to invest in energy efficiency, earn a fair return on those investments, and be kept whole for lost sales caused by such investments. By employing this approach, the State can best provide the sources of capital and the incentives to aggressively pursue energy efficiency and conservation measures. Moreover, this could be the start of incentivizing utilities to deploy energy efficiency projects across all customer classes, geographic areas and economic strata given that energy efficiency is the most cost-effective way to reduce carbon.

Conclusion

Concentrating on these areas has the greatest potential for helping the State to meet the challenging environmental and economic issues that it faces. PSEG appreciates the opportunity to provide these comments, and looks forward to a continuing dialogue consistent with the goals set forth in the 2015 EMP Update.

Respectfully submitted,

Joseph F. Accardo Jr.

December 4, 2015

Fuel Merchants Association of New Jersey

TO: EMP 2015 DRAFT

FROM: Eric DeGesero, Executive Vice President

RE: EMP 2015 DRAFT Comments

The Fuel Merchants Association of New Jersey (FMA) represents small business owners who distribute heating oil, diesel fuel, and gasoline. Our members also provide HVACR service and installation.

FMA opposed the 2011 Energy Master Plan, as outlined in our August 24, 2011 comments. Since the 2015 draft revisions continue along the same path of government preference of one fossil fuel over another, FMA opposes the 2015 draft for the same reason: The desire to put our industry out of business.

- *New Jersey has many options to pursue for clean and cost effective sources of electricity, to utilize fuels more efficiently, and to reduce gasoline and diesel fuel as transportation fuel.* (page 11)

- *Although New Jersey is generally well-supplied with natural gas pipeline capacity for heat and existing power generation, the state lacks adequate natural gas infrastructure to support new, gas-fired electrical generation, as well as substitution for other fuels in the residential and commercial sectors. Expanding the capacity for natural gas can increase economic development with lower costs for energy and enhance environmental quality through lower emissions.* (page 21)

FMA completely disagrees with the above statements.

The EMP 2015 draft acknowledges that petroleum prices have decreased, production has increased, and vehicle efficiency has dramatically increased (i.e., in 2025 vehicle efficiency will be 54.5 mpg fleet wide average) so why aren't these achievements given the same emphasis that those pertaining to natural gas are?

With the reduction of sulfur in heating oil to 15ppm sulfur, heating oil and natural gas are effectively equivalent in the emissions of CO, NOx, SO2, and PM 2.5. Furthermore, when blended with ASTM Specification 6751 biodiesel at as low as 2% by volume, heating oil (Bioheat) has the same global warming footprint as natural gas. Higher blends make heating oil's footprint even less than that of natural gas. Heating oil routinely can contain up to 5% Biodiesel.

Throughout the document, the BPU states its strong advocacy for increased natural gas pipelines. From a statewide energy perspective, FMA believes the BPU should voice equal support for

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construction of other energy pipelines that have multifaceted societal benefits, such as the Pilgrim Pipeline.

The 2015 Draft EMP also discusses the challenges presented because of unprecedented weather events since the 2011 EMP.

During Sandy and in addition to the service station network, FMA's members responded to the emergent needs of all critical infrastructure in the state by supplying them with fuel they needed for generators and vehicles. There needs to be a critical mass of companies engaged in the business of petroleum distribution on a daily basis in order to be there in an emergency. A policy that encourages their being put out of business will not aid this objective.

As we stated in our 2011 conclusion, "*FMA urges that this draft EMP not be adopted. Rather it should be revisited to recognize the contribution of all forms of energy and the need for a diversity of energy supplies.*"

Michael J. Renna
President and
Chief Executive Officer

December 3, 2015

VIA REGULAR AND ELECTRONIC MAIL
Irene Kim Asbury, Secretary of the Board
New Jersey Board of Public Utilities
44 South Clinton Avenue, PO Box 350
Trenton, NJ 08625
EMPupdate@bpu.state.nj.us

Re: Comments 2015 Energy Master Plan Update

Dear Secretary Kim Asbury:

Thank you for the opportunity to offer comments on the New Jersey Energy Master Plan update and for allowing South Jersey Industries the chance to help drive the State's vision for our energy future.

South Jersey Industries commends the Board of Public Utilities for its continued reflection and evaluation of the State's Energy Master Plan (EMP). The timely and thoughtful review of the 2011 EMP is critical to ensuring the State continues on the path outlined four years ago while recognizing changing economic and environmental conditions such as the dramatic reduction in the price of natural gas, the need to enhance infrastructure resiliency following the impacts of Superstorm Sandy and continued support for the advancement of renewable energy.

We believe the overarching goals of the EMP outlined in this update provide a sound energy policy for New Jersey. South Jersey Industries remains committed to helping the State achieve its goals in driving down energy costs; promoting a diverse portfolio of new, clean, in-state generation; rewarding energy efficiency and conservation to reduce peak demand; capitalizing on emerging technologies for transportation and power production; protecting critical energy infrastructure; and maintaining support for the RPS of 22.5% by 2021.

South Jersey Industries is pleased the revised EMP continues to include and promote the use of natural gas, the expansion of natural gas pipelines, the development of 1500 MW of combined heat and power and distributed generation, and the need to capitalize on emerging technologies for transportation, in particular highlighting the benefits of compressed natural gas vehicles.

South Jersey Gas remains strongly supportive of energy efficiency programs and is a willing partner in efforts to expand or enhance energy efficiency programs to our customers. As one of the first utilities in the country to implement an innovative Conservation Incentive Program (CIP) rate structure, we are fully aware of the economic and environmental benefits of energy efficiency to the State. Our CIP program encourages

customers to use natural gas more efficiently by educating them about measures they can take to reduce consumption. The CIP program focuses on reducing consumption. As a result of the CIP, from October 2006 through September 2015, customers have reduced their natural gas usage by a total of 49.7 billion cubic feet, enabling them to save $508.2.0 million in energy costs.

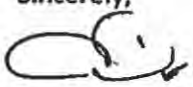
We are pleased the EMP continues the support for alternative fueled vehicles. Compressed natural gas vehicle adoption in New Jersey continues to lag behind other states and the commitment by the Board of Public Utilities to expand efforts to promote the use of alternative fueled vehicles will afford a significant reduction in both emissions and transportation costs. The State's encouragement of this technology through incentive programs and tax credits is imperative to the continued investment in CNG infrastructure and adoption.

We applaud the action by the State in 2012 and 2015 to stabilize the solar market and increase the solar net metering capacity; encouraging rational and cost-effective development of solar. New Jersey continues to be a leader in the nation for the development of small and large scale solar projects. South Jersey Industries supports the State's continued investment in renewable energy and the long term commitment to achieving a renewable portfolio standard of 22.5% by 2021.

South Jersey Industries remains committed to partnering with the State to help drive down the cost of energy, deliver safe and reliable service, improve energy efficiency, and support investment in renewable energy. We commend New Jersey's accomplishments since the 2011 Energy Master Plan was released and the administration's most recent thoughtful evaluation and update.

Thank you again for the opportunity to provide comments.

Sincerely,



Michael J. Renna
President and CEO

December 4, 2015

EMP Update
Board Secretary
PO Box 44 S. Clinton Ave
Trenton, NJ 08625

Re: Comments of the Mid-Atlantic renewable Energy Coalition on the Update to the 2011 Energy Master Plan

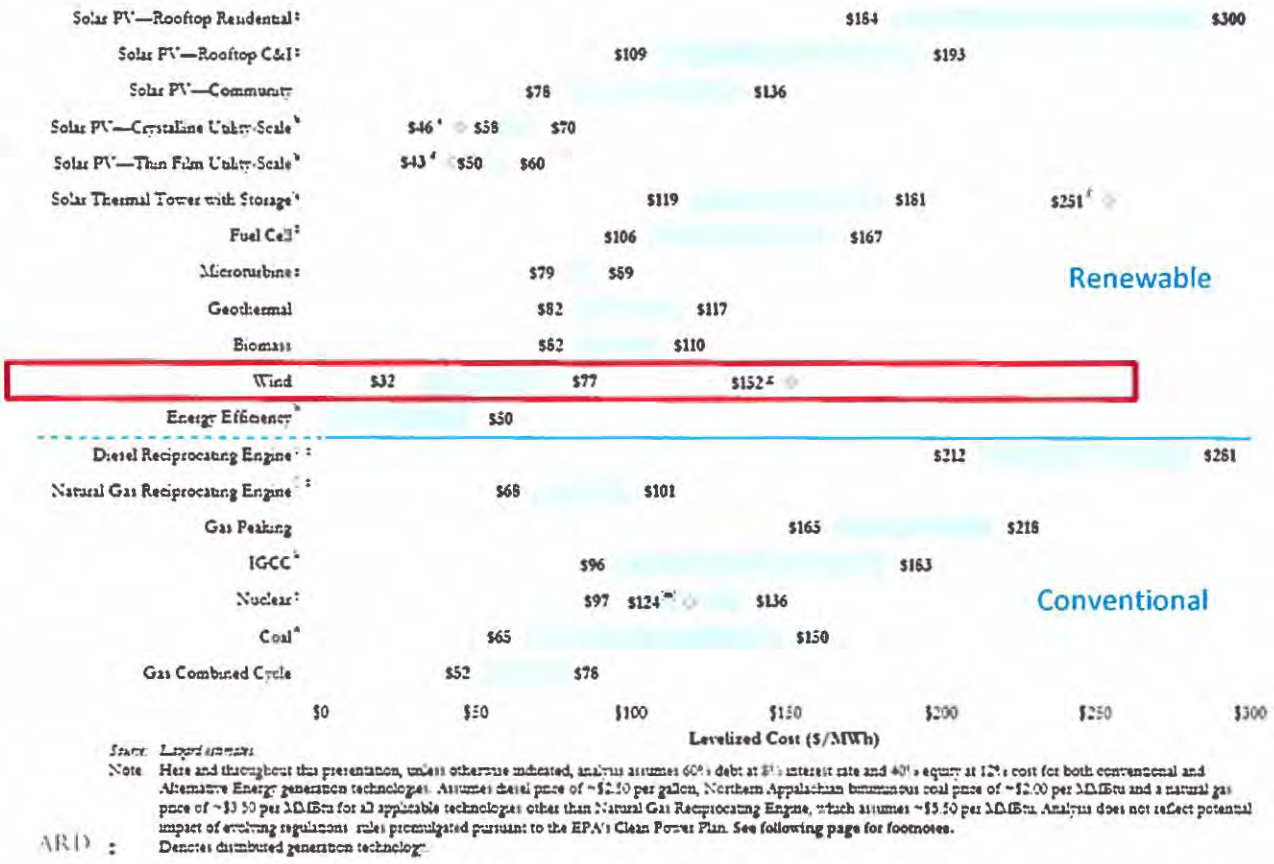
Dear Secretary Asbury:

The Mid-Atlantic Renewable Energy Coalition ("MAREC") appreciates the opportunity to provide additional comments on the Update to the 2011 Energy Master Plan ("EMP" or "Plan"). MAREC is a nonprofit organization that was formed to help advance the opportunities for renewable energy development primarily in the region where the Regional Transmission Organization, PJM Interconnection operates. MAREC's footprint includes New Jersey and eight other jurisdictions in the region. MAREC members include wind developers, wind turbine manufacturers, service companies, non-profit organizations and a transmission company dedicated to the growth of renewable energy technologies. MAREC members have developed, own, and operate thousands of megawatts of renewable energy serving the PJM territory, including serving customers in New Jersey.

One of the concerns of the EMP is that New Jersey still has some of the highest electricity rates in the country. Utilizing onshore wind energy can help reduce that rate. According to the DOE's Lawrence Berkeley National Laboratory, since 2009, the cost of land-based wind energy has dropped nearly 66%, making wind increasingly competitive with traditional electricity sources.[1] A recent analysis from the consulting group Lazard found that, on a levelized basis, wind has the

[1] Department of Energy (DOE)'s "2014 Wind Technologies Market Report" (released August 2015) at page 56. http://emp.lbl.gov/sites/all/files/lbnl-188167.pdf

lowest cost of energy for either conventional or alternative sources of electricity, as shown in Figure 1.[2]



Source: Lazard analysis

Note: Here and throughout this presentation, unless otherwise indicated, analysis assumes 60% debt at 8% interest rate and 40% equity at 12% cost for both conventional and Alternative Energy generation technologies. Assumes diesel price of ~$2.50 per gallon, Northern Appalachian bituminous coal price of ~$2.00 per MMBtu and a natural gas price of ~$3.50 per MMBtu for all applicable technologies other than Natural Gas Reciprocating Engine, which assumes ~$5.50 per MMBtu. Analysis does not reflect potential impact of evolving regulations/rules promulgated pursuant to the EPA's Clean Power Plan. See following page for footnotes.

ARD: Denotes distributed generation technology

Figure 1 Unsubsidized Levelized Cost of Energy ***Source: Lazard's Levelized Cost of Energy Analysis 2015***

Wind energy has zero fuel costs and can be purchased using long term contracts, locking in the low rate for 10-20 years. These long term contracts provide a valuable long term hedge against volatile fossil fuel prices. Figure 2 shows how long-term contracts can ensure a low price even while gas prices continue to rise.[3] Wind energy from onshore land-based wind farms from a price perspective compares very favorably to other energy resources in wholesale markets[4] and when comparing new construction of these generating resources.[5]

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[2] Lazard's Levelized Cost of Energy Analysis. November 2015. https://www.lazard.com/media/2390/lazards-levelized-cost-of-energy-analysis-90.pdf

[3] Department of Energy (DOE)'s "2014 Wind Technologies Market Report" (released August 2015) at page 60. http://emp.lbl.gov/sites/all/files/lbnl-188167.pdf.

[4] *Id* at 57-58

[5] Lazard's Levelized Cost of Energy Analysis — — Version 9.0 at page 11. https://www.lazard.com/media/2390/lazards-levelized-cost-of-energy-analysis-90.pdf (November 2015).

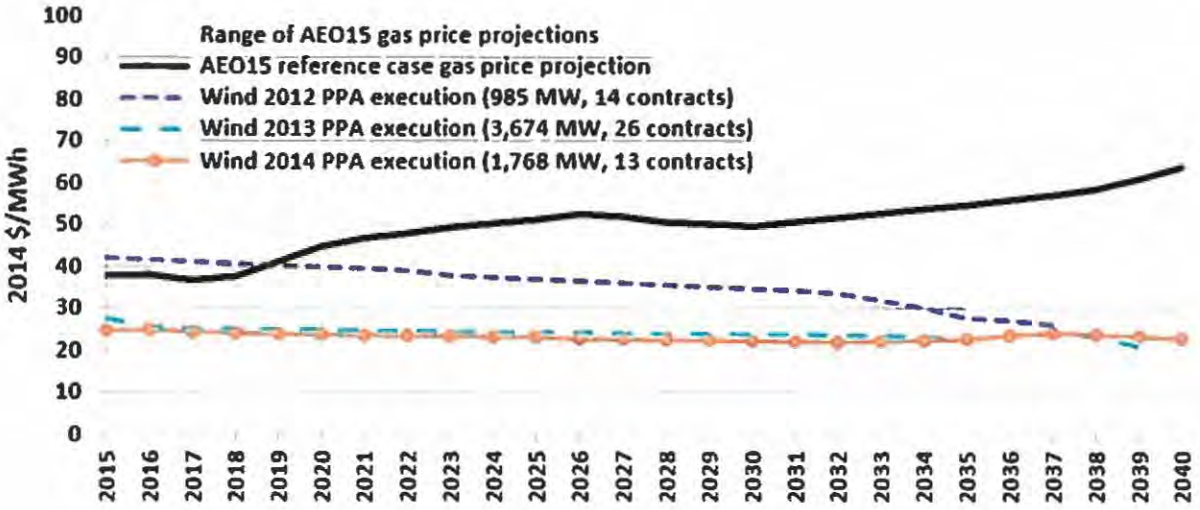

Figure 2 Effect of Long-Term Contracts on Electricity Price

Not only is wind energy cost-effective, but policies supporting long-term (10-20 years) contracts for wind energy help get these projects financed at reasonable rates and ensure price stability. This is because the resource itself is not subject to the price volatility facing traditional fossil fuel resources over the long-term, like coal and natural gas.

For instance, a recently announced power purchase agreement between the Washington, D.C. city government and Iberdrola Renewables to purchase 125,000 MWh of wind energy annually from a 46 MW Pennsylvania wind farm will save D.C. residents $45 million over the 20 year term of the contract. Mark Chambers, sustainability and energy manager of the D.C. Department of General Services, which manages the District's government buildings, said "Directly sourcing renewable power costs 30% less than fossil fuel-based sources, reduces greenhouse gas emissions by 100,000 tons, and protects our city from volatile energy price increases."[6]

This strategy of long-term, out of state contracts is being employed in a number of instances[7] in efforts to meet several different goals, not the least of which is to reduce costs and provide stable pricing to ratepayers. While D.C. believes it is very important to increase its in-District solar footprint, it also recognizes the balance needed to bring in lower and stable priced renewable energy from outside its jurisdiction. Unfortunately, this viewpoint is not reflected in

[6] http://www.utilitydive.com/news/district-of-columbia-will-get-35-of-its-power-from-wind-with-record-iberdr/402369/

[7] For example, in 2014 Massachusetts signed 12 PPAs to procure wind energy from Maine and New Hampshire at a weighted cost of $0.08/kWh. (http://www.nawindpower.com/e107_plugins/content/content.php?content.12664) To name another, in 2008 Wisconsin signed a deal to own and operate a 99 MW wind farm in Iowa. (http://psc.wi.gov/apps35/erf_view/viewdoc.aspx?docid=94876)

the current draft of the updated New Jersey EMP. We think that the current draft should be revised to include a goal to import a reasonable level of out-of-state wind, or at a minimum to allow for the possibility, in an effort to cost-effectively meet its Renewable Portfolio Standard and balance the impacts of higher cost energy procured from in-state resources. In addition to the EMP's support of offshore wind, we think it is important that onshore wind resources be considered as a significant resource in helping New Jersey meet its renewable portfolio standard.

The 2011 Energy Master Plan expresses a preference for in-state renewable development, and we do not oppose some reasonable preferences, such as the existing solar carve-out. In addition, we note the State's continued interest in offshore wind and find that commendable. We also understand the current focus to ensure that those facilities, when built, will be cost-effective after considering the economic development and environmental benefits. We actually believe that these facilities, as well as certain solar generation facilities, would become more cost-effective if the state is less reliant on procuring most or all of its renewable energy on in-state generation. The ability to balance the economic benefits of developing some in-state renewable generation with meaningful amounts of out-of-state, lower cost renewable generation makes a great deal of sense in meeting the State's goals of enhancing economic development, while at the same time providing cost-effective renewable (100% emission free wind and solar) energy to its citizens.

Lower cost options, such as onshore wind, can be transported in from out of state, as there is a great deal of wind to be found on the PJM Interconnection. This lower cost electricity will encourage business and industry to locate in New Jersey or for established firms to reap the benefits of lower cost compliance with the RPS, thus improving the economy of the state. In addition, there are 13 facilities in New Jersey that manufacture wind turbine components. Keeping the industry viable nationwide will continue to support those businesses.

Finally, we would urge that it be made clear in the Energy Master Plan that the requirements for Class I renewable energy resources be left solely for zero-emitting renewable resources. Renewable energy resources, like solar, wind, and geothermal energy serve to reduce the state's carbon footprint consistent with the intent of the renewable energy portfolio standard, but are also a critical element ("building block") now in meeting the requirements of the EPA's Clean Power Plan. When an RPS standard is amended to move a non-renewable energy source, such as waste energy, into Class I, the incentives to produce clean and renewable technologies are weakened.

MAREC again wants to thank the Board of Public Utilities for allowing interested parties, like MAREC, to participate at the hearings on the update to the EMP, as well as providing written comments on the update to the Plan.

Sincerely,

Bruce H. Burcat

Bruce H. Burcat
Executive Director
Mid-Atlantic Renewable Energy Coalition

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