Final Report
Focused Audit of Affiliated Transactions and Management Audit of the New Jersey Natural Gas Company

Volume One: Gas Supply

Public Version
(No Confidential Version Exists)

Presented to the:

Division of Audits
New Jersey Board of Public Utilities

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I. Organization, Staffing, and Controls

A. Background

The organization structure sets the basic framework for managing and conducting gas procurement activities. A well-designed organization structure brings all required talents to bear, without fractionalizing decision-making responsibility and accountability. A sound structure promotes sufficiency and speed of communications flow, maintenance of necessary controls over decisions, and capabilities and experience required to fulfill important roles.

Gas supply management activities require a trained and capable staff with particular skills in the planning, engineering, and operational areas, coupled with knowledge of and experience with gas markets. Staffing efficiency also requires avoiding duplication of effort among different departments and the combination of related responsibilities within single individuals or groups.

The cost of gas delivered to the city gate comprises by far the most significant component of an LDC's cost to provide utility services. Comprehensive goals and objectives for the procurement and purchasing functions and activities make primary contributions to successful performance. Top management should devise measurable targets. On a more detailed level, policies and procedures provide added definition and control to the management and conduct of activities in the pertinent functions. Those policies and procedures should cover gas supply planning, short- and long-term procurement, establishment of pre-approved supplier lists, bidding procedures, documentation of contract negotiations, contract accounting and administration, measurement and sampling, among other items. Other written process definition and control measures, such as job descriptions, evidence the degree of comprehensiveness and clarity management has provided for key activities and functions.

Liberty evaluated the organization, staffing, and operational controls systems, considering the needs of NJNG within the overall corporate structure. The independence of the utility (NJNG) from the trading affiliate (NJRES) formed an important consideration in this part of the audit. Liberty's review examined the background and experience of company personnel, the level of streamlining and consolidation of staff and functions, and potential gaps or overlaps in the organization.

Liberty's audit evaluated how the Company develops, communicates, and uses important controls and procedures for gas procurement. Liberty interviewed key individuals in the utility, NJRES, and the corporate Internal Audit (IAD) staff. Liberty also observed purchasing, morning meeting and gas control activities, in addition to the many DRs asked. Liberty was simultaneously concerned with:

- How well the key employees understood what they were doing, why they were doing it, and what they felt their targets and metrics were
- How the key employees viewed authority limits, controls, procedures, documentation, potential conflicts of interest, and operational integration with others
- How key employees approached assessing their performance relative to the market, and their own performance in general

- How key employees' training and experience suited their positions, how comfortable they felt in their positions, and their backups
- Consistency in employees' answers with each other and with data and reports
- Overall tone, confidence, and culture of the organization
- Any activities or situations that appeared to possibly conflict with the independence of the utility from its affiliates.

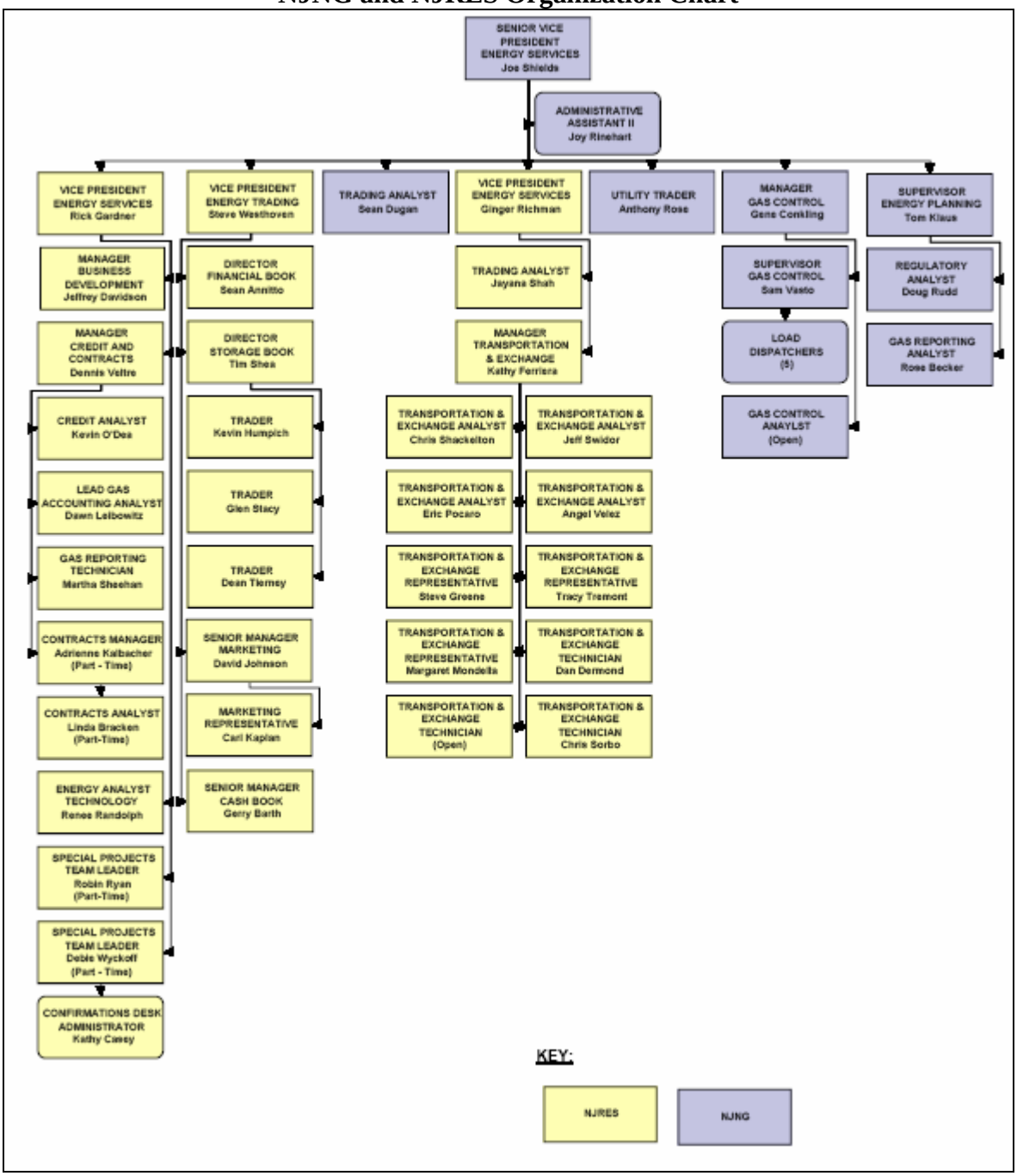
B. Findings

1. Overall Organization

NJR has integrated the organizations responsible for gas supply planning, acquisition and management for NJNG and NJRES, the wholesale marketing affiliate. The Senior Vice President Energy Services has responsibility for this organization and therefore the work performed for both the utility and the affiliate. Three NJRES vice presidents report to this Senior Vice President. The common organization, however, has no executive devoted to the utility. Three of the four key utility positions report directly to this Senior Vice President. The Senior Vice President reports that he spends 75 percent of his time on NJNG matters. The fourth key NJNG position, the Trading Analyst, reports to an NJRES manager; *i.e.*, the Director-Financial Book. This Trading Analyst position description confirms this reporting relationship, although the organizational chart shows the Trading Analyst reporting directly to the Senior Vice President. The next table shows the NJNG and NJRES organization chart.

The three key NJNG gas-supply positions reporting directly to the Senior Vice President include the Utility Trader, the Manager Gas Control (who has seven subordinates), and the Supervisor Energy Planning (who has two subordinates).

NJNG and NJRES Organization Chart



The fourth key NJNG gas-supply position, the Trading Analyst, reports to the Director-Financial Book within NJRES, who in turn reports to the Senior Vice President through the Vice President Energy Trading, NJRES. The Trading Analyst also works with NJRES traders on the floor. The Trading Analyst and the NJRES Director-Financial Book serve as backups for each other. The Trading Analyst estimates that he spends approximately 40 percent of his time for NJRES. The NJRES' Director-Financial Book estimates that he spends about 20 percent of his time on NJNG and the remaining 80 percent on NJRES. Neither fills out a timesheet.

The NJRES Senior Manager-Cash Book trained the NJNG Utility Trader, and still provides him guidance. The Utility Trader uses various people in the NJRES Transportation & Exchange (T&E) function as backup. These backups include two T&E Analysts, one T&E Technician, and one T&E Representative. All four report to the Manager T&E, who reports to the Senior Vice President through the Vice President Energy Services, NJRES. These four individuals fill out time sheets when working for NJNG.

The Manager Credit & Contracts and five subordinates have responsibility for applying credit controls to each counterparty of NJNG and NJRES and for allocating between NJRES and NJNG the established credit limits for each counterparty. This position reports to the Senior Vice President through a second NJRES Vice President Energy Services. The Manager Credit & Contracts estimates that he spends 60 percent of his time on NJRES and 40 percent of his time on NJNG. He fills out time sheets. Three of his subordinates work about 40 to 50 percent of their time for NJNG; all use time sheets. His remaining two subordinates do limited work for NJNG, and fill out a time sheet when this happens. The utility's Supervisor Energy Planning sometimes uses Credit & Contracts personnel as backup for his Gas Accounting Analyst in NJNG.

In comments on Liberty's draft Report, the Company noted that, as of July 1, 2007, two T&E representatives, a T&E supervisor and an Energy Trader are all now NJNG employees and there will no longer be sharing of T&E responsibilities.

2. Responsibilities of Key Positions In and Supporting NJNG

Senior Vice President Energy Services

The Senior Vice President Energy Services has total accountability for NJNG and NJRES gas supply activities. He has chosen not to place a *"general manager NJNG"* between him and the NJNG people who now report to him directly. He makes all key decisions for the utility, including commodity, capacity, and storage; and he works with his utility direct reports on the strategy he wishes to follow. His utility direct reports often fine-tune the short-term operations on their own. The Supervisor, Energy Planning performs analytical work for storage and capacity decisions that is presented to the New Jersey Board of Public Utilities ("BPU") in the annual Basic Gas Supply Service ("BGSS") filings after input from the Senior Vice President.

Utility Trader

The principal responsibilities for the Utility Trader include reliability for gas customers behind NJNG city gates, optimizing transportation capacity, off-system sales and capacity releases, and managing utility storage. Securing the lowest price for commodity comprises his main focus, with optimizing capacity his second priority. This position deals only in the cash market for commodity, and typically only for current needs rather than for the longer term. He has bought a little pipeline capacity on Texas Eastern. This position along with one of the NJRES T&E Analysts does the pricing for Sayreville, Forked River, and Ocean Peaking Power. The pricing for these customers is market-based rather than tariff-based. At month's end, this position allocates commodity purchase costs between on- and off-system sales. This position has not bought or sold storage capacity. The Senior Vice President referred to the Utility Trader as a "junior buyer."

Trading Analyst

The Trading Analyst primarily executes for NJNG commodity futures transactions that support hedging programs, most notably the Storage Incentive Plan and Financial Risk Management Program. Hedging by the Trading Analyst, along with participation in the cash market by the Utility Trader, represent key utility commodity-procurement components, because NJNG does not use an RFP process for buying supply. The Trading Analyst also manages deal entry and tracking for all financial positions in the risk-management systems, maintains daily position reports for physical traders, and prepares risk-metrics reports for management. This position spends about 40 percent of its time for affiliate NJRES.

The Trading Analyst does not deal in the cash market. Utility hedge positions generally extend across a one-year horizon. This position does some hedging of pipeline capacity and storage, specifically for the Storage Incentive Program. The incumbent said his biggest challenge is, "being in industry [only] three years, and trying to learn everything from the Director-Financial Book."

Supervisor Energy Planning

The Supervisor Energy Planning and his two subordinates have responsibilities in two areas: gas-supply planning and gas-purchase accounting. The incumbent's planning responsibilities consist of coordinating development of the long-range load forecast, and making recommendations for transportation, storage and supply capacity. He also coordinates and prepares the development of annual, winter, summer and peak-day plans, performing regression analysis of daily send-out data and peak-day demand and supply forecasts. His accounting responsibilities include verifying invoices against orders and receipts. At the end of each month, he does the monthly gas-cost accounting by 'freezing' the Gas Management System (GMS), verifying the data, putting all costs together, and making the journal entry that goes to Accounting. He also reverses out each month's estimate of gas costs, putting in the current month's actual gas costs, and prepares the following month's estimate. He also performs other associated tasks with Accounting, including preparing the monthly pipeline and LNG gas-cost journal entries, and associated gas-cost reporting. The Supervisor Energy Planning also coordinates, prepares, and submits (with the Senior Vice President's approval) data and work papers supporting BGSS filings and reports in compliance with BPU orders.

Manager Gas Control

The Manager Gas Control and seven subordinates have responsibility for directing, controlling and reporting the safe conveyance of gas from city gates to the Company's transmission and distribution systems. He also manages the operation and maintenance of the dispatching control computer and dispatching function.

Manager Credit & Contracts

The Manager Credit & Contracts has responsibility for all credit and contract-related matters for NJRES and NJNG's wholesale transactions. He also performs invoice processing and monthly close processes for NJRES. His other responsibilities include representing the Company on the Iroquois Gas Transmission System's Management Committee as alternate, NJRES annual budget development, monthly cash and financial forecasting, and providing information for compiling the Company's SEC Forms 10-Q and 10-K.

Position Descriptions
The activities of all of these key individuals are consistent with their position descriptions, with the exception of the position description noted for the Utility Trader. The position description was that for his previous position in T&E.

3. Training, Experience, and Performance of Gas Procurement Staff

The Senior Vice President joined NJNG in November 1983, became Manager of Gas Supply Operations in July 1990, was promoted to Director of Gas Supply in 1995, and was named Vice President of Gas Supply in January 1996. He has held his current position since January 1997. He cited no metrics for assessing his performance.

The Utility Trader joined NJNG in 1989. He has worked in various departments within the Company including Construction Services, Engineering and Marketing. He joined the Energy Services business unit in 2001 as a Transportation & Exchange Analyst, where he nominated and tracked NJNG transportation and storage assets. He began training as a Utility Trader in 2004, and subsequently became the primary NJNG trader in 2005. Costs versus a monthly commodity price index and optimizing capacity (conducting off-system sales and capacity releases) serve as his important performance measures.

The Financial Trading Analyst joined NJNG in this position in 2003, following six years as a sales trader on an equity trading desk for a large investment bank. His performance is assessed by how well the hedging is executed and whether it saves money.

The Supervisor Energy Planning joined NJNG in 1979 as a Gas Supply Analyst. He has performed many gas supply activities, including gas purchasing, gas-cost accounting, peak-day and annual load analysis, regulatory analysis, and load and gas-cost forecasting. He has been a central figure in preparing and supporting the annual gas-cost recovery rate filings, and has participated on many inter-departmental process teams. As an adjunct to his current position as Supervisor of Energy Planning, he supervises NJNG's supplier rate-case activities at the American Gas Association and the Federal Energy Regulatory Commission. Performance in this position is assessed by closing monthly gas-cost books on time and effective peak-day planning.

The Manager Gas Control joined NJNG in July 1976, and has held many positions in the Engineering Department. He has been a licensed Professional Engineer in the State of New Jersey since 1983. The incumbent has been a member of the American Gas Association (AGA) Gas Control Committee since 1995, and has been the Committee Chairman twice. He has been a member of the AGA Best Practices - Benchmarking Steering Committee since 2003. He is a member of the Society of Gas Operators (SOGO), an industry group focused on the sharing of information relevant to Gas Operations. Performance in this position is assessed by the lack of outages.

The Manager Credit & Contracts held several accounting and auditing positions before joining NJR. He is a Certified Public Accountant in the State of New Jersey. He joined NJR in 1995, and worked as a Lead Auditor in the Internal Audit Department for two years. He then transferred to a now inactive marketing affiliate, where he developed marketing analysis tools and performed

retail transportation tariff analysis. He served next in an NJR business-development role, and then joined NJRES in 2001. He has served NJRES as Manager, Credit & Contracts since 2002.

Other than the performance specifics cited above, utility Energy Services staff felt that their responsibility was to perform their duties well. Unless a supervisor said something to them to the contrary, they assumed their performance was fine. They typically commented on receiving an annual appraisal and some commented on receiving a "360-degree" assessment (a peer assessment of working relationships). Typical were sweeping comments on their understanding of performance standards like "save money", "do my job efficiently."

4. Approval Authorities

The NJNG Risk Management Committee Guidelines and Procedures (RMC Guidelines) set forth approval requirements. This July 2005 document addresses multiple sources of business risks (*e.g.*, market risk, credit risk, operational risk, legal risk, and tax risk), and summarizes the programs that have been approved by both the Corporation and the NJ BPU to manage them. One of the basic drivers for this risk management is the concern that costs which now are recovered through the BGSS may not be totally recoverable in the future, and that the utility needs to be proactive in managing its portfolio of supply, transportation and storage assets.

Various programs cited in this document include:

- Off System Sales and Capacity Release, which includes the sale of commodity and capacity not needed by the utility in the short term and taking advantage of market dislocation and other opportunities
- Financial Risk Management Program, which involves using natural gas options to hedge the commodity price risk within the BGSS portfolio
- Storage Incentive Program, which sets a yearly benchmark (target) price for 18 Bcf of storage commodity based on market conditions, and tries to better this price through hedging and trading.

The RMC Guidelines specify the dollar or percentage limits applicable to various programs. It also specifies the margin-sharing between utility customers and the utility. It specifies approval authorities and limits, along with application of those limits to suppliers, brokerage firms and commodity exchanges. The guidelines also required reporting or notification and potential courses of action in case of rule infraction or misconduct.

Traders have authority to make capacity and commodity trades for up to 50,000 MMBtu/day, for up to 12 months. The Vice President of Trading (NJRES) or the Senior Vice President of Energy Services (NJNG/NJRES) must approve any trades that exceed one year, and the Senior Vice President of Energy Services must approve in writing all transactions if the at-risk exposure exceeds $1 million. The President of NJNG must approve in writing all transactions whose at-risk exposure exceeds $5 million, and the Board of Directors must approve all transactions whose at-risk exposure exceeds $20 million. The company defines at-risk exposure as the mark-to-market value of open positions.

All transactions require a contract executed by both parties. Physical transactions commonly use a GISB (Gas Industries Standards Board) or NAESB (North American Energy Standards Board)

base contract for short-term sale and purchase of natural gas. Financial transactions commonly use an ISDA (International Standards and Derivatives Association) contract.

The RMC Guidelines also require that the Manager, Credit & Contracts "*have clear independence and authority separate from the trading function*" for the purpose of authorizing credit, setting credit limits, monitoring and reporting credit exposure, and reviewing the creditworthiness of counterparties. The RMC Guidelines also address specifically how key activities will occur (*e.g.*, phone trades will be made with recording devices, and all transactions "*will be in the GMS (Gas Management System) or Zai*Net systems*." Most RMC Guidelines address hedging activities, but they also address physical purchases and sales.

Credit comprises an important part of the RMC Guidelines. The Manager, Credit & Contracts and one of his five subordinates actively manage and control the issuance, monitoring and adjustment of credit limits for third parties, under specifications in the RMC Guidelines' Credit and Contracts procedures. A credit update is given at the daily morning meeting. The Manager, Credit & Contracts monitors the trading platform activities without the knowledge of the traders to check that they are dealing within proper credit limits. The company uses numerous credit reports; Liberty found that this credit unit was proactive in doing its job and in making procedures and data readily available.

A collection of procedures applicable to the entry of transaction information into the GMS or Zai*Net systems provide additional control over gas-supply activities. These procedures primarily offer checklists or descriptions of common practice. The utility's Energy Services Planning Process Overview, for example, focuses on arriving at daily system send-out volumes and monthly gas cost data. It contains a thorough description of conducting these activities. The 2000 – 2009 Peak Day Study details the five mathematical approaches used to converge on the forecast. General Scheduling Procedures, including the morning meeting, are summarized. Good descriptions for proper performance of scheduling, buying, training and related activities exist. A further Risk Management Committee report gives additional details of execution targets and standards for hedging commodity. Details for the monthly closing procedure and checklist, as well as the guidelines for cost allocation between on-system and off-system sales, are also specified.

The company prepared these procedures documents at various times over the audit period. The 2000–2009 Peak Day Study was done in 1999; some of the descriptions for proper performance of scheduling, buying, training and related activities have existed for some time. Others, like the further RMC report, have been written within the last couple of years. Still others, like the summary of monthly closing procedure, appear to have been collected into a comprehensive document very recently. A common response from interviewees in the utility about whether written procedures existed for what they were doing was to cite the RMC Guidelines and "common practice." Energy Services personnel seemed reasonably clear on their authority limits, whom they needed to check with if needed further authority, and what documentation was required to be entered into the GMS and Zai*Net systems in order to assure recording of the mandatory data needed for regulatory reports.

NJNG rolls out processes or procedures applicable to new activities (like risk management or hedging) by fine-tuning them "in practice" under guidelines communicated informally, and then documents them formally later. The RMC Guidelines document was dated 2005, but hedging had been done for some years earlier. Anther good example of this approach in procedure documentation includes "works in progress" for financial deal entry, position tracking and reporting from the Zai*Net risk management system and GMS, BGSS hedging parameters, description of approved derivatives and strategies, descriptions of incentive guidelines and reports, descriptions of all risk-management reports, descriptions of all BGSS planning reports, and procedures and parameters for transacting on NYMEX (New York Mercantile Exchange) and ICE (Intercontinental Exchange). Pieces of this information are contained within the documents cited in this section.

Liberty did not find reports or analyses that rigorously scope alternatives either before or after the fact. There is abundant operating and reporting data, some of which could be used for planning and for after-the-fact evaluation. The manner in which the Utility Trader and Trading Analyst trade in the market daily generates many alternatives from which they can choose. Apart from casually checking market literature after the fact, however, they were not doing 'what if' analyses on their activities to help guide future choices. Examples of this lack of analysis include the following:

- A data request for any analysis done of the Month End Price Comparison Report produced a response stating that no analyses were done.
- Another data request for information on comparative analyses performed and selection criteria used to obtain gas supplies during the audit period resulted in receipt of a (partial) list of long-term commodity contracts and no analyses.
- A data request for reports, analyses or plans showing the geographic sourcing distribution of the commodity resulted in copies of yearly reports showing suppliers segmented by states, without any comparative analyses.
- A data request for reports, analyses or plans showing the type of commodity supplier resulted in a report generated to respond to this data request that showed the type of commodity supplier for each audit year, but without indication of any analyses or evaluation of alternatives having been done.

The Supervisor Energy Planning prepares data and reports for regulatory purposes, and forwards them to the Senior Vice President for final review and, where required, signature. There is little documentation of anything other than reports required for public-utility and securities regulation.

The Manager, Credit & Contracts said he found the policy specifics in the RMC Guidelines adequate and appropriate for his areas of responsibility and overall. He has helped to keep the specifics current by adding traders when they join the company and increasing limits to reflect the increased cost of commodity. He characterized the RMC Guidelines as a "living document." It was evident to Liberty that this manager proactively oversees his credit accountabilities and that he is permitted to function with the independence required.

Liberty found gas supply personnel knowledgeable about what they needed to do. Noticeable, however, was the frequent lack of process or procedure documentation. Many routine types of activities have been done for so long that the "common practice" procedures are communicated

person-to-person by example. For example NJRES's Director-Financial Book trained NJNG's Trading Analyst and NJRES's Senior Manager-Cash trained NJNG's Utility Trader.

Liberty heard frequently that the utility and the NJRES affiliate do not do business between themselves. They reported to Liberty only very limited numbers of transactions between them, including 13 financial and market deals from 2002 through 2004, and 111 operational exchanges. As part of the utility's Conservation Incentive Program (CIP), a new capacity-release agreement has been entered for August 1, 2006 to March 31, 2008. That agreement provides for release to the affiliate of capacity under contract to the utility.

The Senior Vice President stated that T&E balancing took place in the past between the two companies, but that they do not do that any more, largely as a result of being made aware of the difficulties that another New Jersey utility encountered with an audit. He further commented that any deal between the two affiliates was reviewed by BPU Staff and the Ratepayer Advocate. For the CIP, he said BPU Staff and he worked out demand charges to lower them for customers. He made clear that part of the CIP agreement included NJNG's capacity call-back rights for possible peak-day use, which necessitated a capacity-release agreement between NJNG and NJRES. When asked about the Base Contract for Sale and Purchase between NJRES and NJNG, dated May 26, 2006, signed by him for the utility and NJRES's Vice President Energy Trading, he replied that he needed to have an NAESB contract in place in case of emergency and for potential CIP call-back for peak days.

5. Internal Audit Reviews

IAD performs a gas-purchase audit each year. The reports from these gas-purchase audits (called an Internal Auditing Memorandum) essentially did not change from 2001 through September 30, 2005. The Audit Manager oversees the audit schedule for implementation monitoring progress, reviewing audit work papers which are the output of the audit, reviewing audit reports which go the Vice President for final review, and keeping the audit manual current. He currently is also part of the implementation team for the Paisley software for Risk Navigator, which is a data base for maintaining internal control documents testing for Sarbanes Oxley (SOX) compliance. Since 1998 he served as a lead or senior auditor for NJR, thus giving him considerable hands-on experience with the audits during that time period.

The Lead Auditor does operational, compliance, financial and SOX reviews as directed by the Vice President Internal Audit. More than 50 percent of his work is with NJNG and NJRES. He has been in his current position since 2001.

They audit NJNG Gas Purchases annually and, generally, issue two reports per year: March 31 for six months prior, and Sept 30 for six months prior, every year. In fiscal year 2006, one memorandum was issued that covered the full year's work. There were two Gas Purchase Audit memoranda prepared for fiscal years 2002, 2003, 2004 and 2005. Extra audit reports related to the SCADA gas control system in 2003 and in 2004, plus an unbundling report in 2001.

Gas Purchase audit work includes testing from the financial statements to the supporting documentation, and from the supporting documentation to the financial statements. The auditors use the same program from year to year, but have reviewed that program for currency with what

the business is doing. The sample size for invoice testing on each audit was 100 percent for two months selected at random by the Lead Auditor. These audits evaluate whether the invoices are calculated correctly and if the costs seem reasonable. To judge reasonableness, invoice costs are compared with other vendors from around the same time. Outside market data is not reviewed. The auditors check that the same information appears in different places, and validate agreement for each invoice. Audits also check LNG inventory. For the commodity that is in storage (which is almost the entire inventory), the auditors review reports from certifications on volumes of commodity in storage. As part of gas purchase audit, the team looks at on- and off-system sales. The auditors report that nothing atypical has been found.

With regard to off-system sales, the auditors check whether the sharing of margins between the utility customers and the Company is being done correctly, and if the total profit margin is correctly determined. Beyond that the review is the same as for gas purchases – from financial statements to the supporting documentation and from the supporting documentation to the financial statements, through system to ledgers, and checking if rates in the tariff are being used correctly.

As part of each gas-purchase audit for NJNG, the auditors check for those direct transactions of any kind between NJNG and affiliates that have a financial cost to one party or another. The lead auditor said he has seen no transactions between NJRES and the NJNG utility. Liberty mentioned the data request that listed the 13 financial and market deals between NJRES and NJNG from 2002 through 2004, plus 111 operational exchanges, and a new capacity-release agreement from NJRES to NJNG for August 1, 2006 to March 31, 2008. The Lead Auditor was unaware of these transactions, as was the Audit Manager.

Neither the Audit Manager nor the Lead Auditor was aware of the Base Contract for Sale and Purchase between NJRES and NJNG. They said they typically do not look at contracts, except to sample gas contracts with credit counterparties as part of the audit work on the Credit and Contracts area.

A series of questions to both the Audit Manager and Lead Auditor revealed that they:

- Do not at look at winter planning or assure themselves that excessive commitments are not made.
- Do not do anything to assure themselves that the NJNG physical gas and futures traders are independent from NJRES; they do not perform much operational auditing, but check that the transactions for each are entered in separate parts of the GMS.
- Have not set up any specific controls to keep the two companies separate, but rely on the systems controls to accomplish that.
- Have not done anything to assure themselves that when the utility trader is buying gas for both on-system and off-system purposes, the cost of gas to the on-system customers is not disadvantaged.
- Have not put controls in place nor audited how the Utility Trader assigns costs between on- and off-system.
- Have not audited whether the utility's Trading Analyst is being influenced by NJRES interests when he trades futures.

- As part of their FASB audit, review broker reports, but could not recall doing anything specific for the SIP program other than checking the paper trail of invoices (Liberty had to remind them what the SIP program is).
- Do nothing to assure that the pipeline capacity NJNG has is appropriate for its level of gas deliveries and that NJRES is not benefiting from NJNG's capacity.
- Do not look at the commodity prices paid to the top five to ten suppliers *vs*. the prices paid to the rest of the suppliers in any given year.[1]
- Do go through a sample of transactions for creditworthiness, and do look at a sampling of contracts, but do not review contracts in general.
- Do not audit the weighted-average-cost-of-gas (WACOG) reports. The lead auditor noted that the WACOG reports are reviewed in the RMC; he just gets a number from the WACOG report to use elsewhere, and looks at estimated *vs*. actual gas costs contained in the WACOGs. He does not look at the roll-up of numbers in the report itself.
- Do not look at NJNG's Commitments and Contingent Liabilities (to see if there is an apparent excess that would benefit an affiliate).

IAD confirmed that settled derivatives are in the Income Statement and unsettled are on the Balance Sheet using a mark-to-market methodology. The Audit Manager said he checks that numbers are flowing correctly through the formula set by the NJ BPU so that the customer's bills are done correctly.

The auditors do not perform specific procedures during the Gas Purchases Audit to identify inappropriate activity. However, through comparison of prices contained on gas supply invoices, the auditors test pricing for reasonableness and feel they would identify any inappropriate activities through the checks and balances done on the amounts in the invoices from gas suppliers. The Audit Manager said he had seen the results of the Barrington-Wellesley Audit Risk Analysis[33] dated May 31, 2005 and was in agreement with the rankings of the gas procurement risk assessments in the report, and was not aware of any actions having been taken as a result of the report.

C. Conclusions

1. The gas supply organization that serves NJNG addresses all important functions, has sufficient expertise, and conducts all the activity types necessary for effective performance.

NJRES and NJNG have combined operations in many of the areas required for effective performance. The next two conclusions address some of the adverse consequences of the commingling of activities and personnel. Apart from that concern Liberty found that the combined organization has assembled a staff having sufficient overall capability and experience in the areas required for successful acquisition, storage, transportation, and management of gas supply. There are clearly some efficiency gains from the use of this organization; *i.e.*, the net number of employees required for each to conduct operations separately exceeds the number required for joint operation.

[1] NJNG advised in comments on this report that, as of June 2007, it has started such an assessment.

As the next conclusions demonstrate, Liberty did not find those economies sufficient to justify continued operation in the current manner, but it is clear that more separate operation will come at the expense of some resource additions on the utility side. Examples of efficiencies gained by jointly operating include senior management of the organization, the sharing of T&E staff, and the use of traders normally operating for one side of the operation to back up staff on the other side.

2. NJNG and NJRES gas supply operations have been commingled. *(Recommendation #1)*

The NJNG organization responsible for gas supply planning, acquisition and management for the utility is integrated with that for NJRES. One Senior Vice President Energy Services has responsibility for both companies; the NJRES affiliate has three vice presidents reporting to this Senior Vice President while the NJNG utility has no executive devoted to only the utility. Many key people for both companies all sit on the same trading floor. The Utility Trader takes guidance, in part, from an NJRES senior manager who trained him. The utility's Trading Analyst reports directly to a Director in NJRES who also trained him, and they are occasionally each other's backup. During the Audit period, all T&E representatives reported to the same manager.

The policy prohibition against the two companies buying and selling gas between themselves is cited as proof that they are independent from each other; however, they are intellectually and physically integrated, and, as discussed elsewhere in this report they have used intermediaries that mask trades between NJRES and NJNG. They have exchanged capacity in the past, and currently have an agreement in place to release capacity from NJNG to NJRES along with a blanket commodity buy/sell agreement between the two companies. This agreement arose out of the CIP negotiations and was suggested by the BPU Staff as a way of protecting NJNG customers by ensuring the availability of capacity, if needed, to meet customer demand in the future.

In practice, the two entities operate as one. More separation would increase total resource numbers, but would also provide for substantially greater assurances that utility needs are the sole focus of those conducting utility transactions.

3. The common supply organization has assigned to NJNG gas supply activities the most junior trading personnel. *(Recommendation #2)*

The Senior Vice President and others refer to the Utility Trader and the utility's Trading Analyst as "junior staff" or as "still learning." The trading and purchasing expertise is clearly in the affiliate and with the Senior Vice President himself.

Other functions at the utility are staffed by highly qualified and experienced people, however. The Manager Gas Control and the Supervisor Energy Planning for the utility are very experienced individuals who have been doing their respective jobs for a long time. Their respective staffs also include people with considerable experience. The utility benefits from the lengthy tenure of these two managers, both of whom have always worked for the utility, not the wholesale trading affiliate.

Because the procurement function in NJNG has been stripped of experienced people in certain areas, it has to depend on the expertise of its affiliate. A benefit of this arrangement is that the

utility has not had to employ additional senior staff. Additionally, the sharing of junior T&E staff between the companies, and the way certain staff in each company back up staff in the other company, adds to the overall corporate efficiency. Needed support activities, like credit, are well integrated with gas procurement. Policies and actions are consistent with gas procurement objectives.

The Senior Vice President who leads both entities has a holistic and seasoned grasp of the market, its challenges, realities and opportunities, and of his regulatory environment.

4. Individual performance assessment relies overly on subjective measures. *(Recommendation #3)*

Energy Services personnel all know that they are accountable for the unit's performance, but individual performance assessment measures are overly subjective; *i.e.*, "meet deadlines," "be efficient." This lack of objectivity takes on greater significance in the combined-resource approach to meeting both NJNG and NJRES needs. People assigned to the utility do not operate under sufficiently -focused performance metrics. Those that exist come from the corporate Commitment to Stakeholders, the annual Three Year Business and Financial Plan, the Energy Services Business Unit Plan and the NJR Management System. Such subjective measures encourage them more to consider the performance of the enterprise as a whole, rather than the utility's performance, in their daily actions and choices.

5. Approval authorities are clear.

There exist designated approval authorities that provide clarity and precision about who may authorize what. This aspect of the RMC Guidelines meets industry standards for documents of this type, and all affected personnel are well aware of the applicable provisions.

6. Policies and procedures are currently being developed, but have not been an important focus of gas-supply management in prior years. *(Recommendation #4)*

For certain activities, incumbent staff have been doing the same or similar things for a long time. Those individuals may or may not have committed descriptions of those activities to writing; therefore, written procedures may or may not exist. Compliance with Sarbanes-Oxley (SOX) requirements for process documentation is being used by the Company as an action-forcing event to get affected policies recorded. Activities not affected by SOX sometimes have recorded procedures, some developed for the purpose of this audit. Coverage of important gas-supply activities is not yet complete, but progress is being made.

Certain important controlling documents like the RMC Guidelines exist and are followed. As a consequence, abundant data on hedging is generated and it is consistent with the Guidelines. Beyond that, many procedures are incompletely documented, or not at all.

7. NJNG does not prepare substantial documentation of gas-supply alternatives considered. *(Recommendation #5)*

The Energy Planning activity within the utility produces all reports required for regulatory purposes: BGSS filings, required reports on the incentive programs, etc. To the extent not required for that purpose, formal analysis does not appear to be performed.

The Company's BGSS filings require projections of supply and requirements, for example. If those projections show a requirement for additional delivery capacity, one of the Company's witnesses might comment on alternatives being considered in his or her testimony in the proceeding. Liberty however saw no analyses of alternatives beyond what was presented in the testimony.

8. Internal Audit does not audit operationally or focus on the potential for inappropriate affiliate interaction. *(Recommendation #6)*

IAD reviews the numbers produced by the Company's procurement processes, but does not review the processes themselves. IAD does not assess the processes or the operation of those processes by Energy Services personnel. During the Gas Purchases audit, IAD examines allocation calculations for off-system sales. IAD examines each sales invoice, for the sample months selected, checking for accurate calculation, proper general ledger entry and agreement to conditions related to BPU Orders. There is an allocation procedure for the cost of gas for off-system sales, for example. Liberty could not find that IAD had ever examined whether that procedure was consistent with regulatory requirements for sales of that type, or whether those gas costs were calculated correctly.

More broadly, Internal Audit would probably not detect mistakes or mischief that occurred before numbers are posted to the accounting system or with numbers not too dissimilar from others in the same time frame. Internal Audit does not appear to view such examinations as within its scope.

D. Recommendations

1. Separate utility and affiliate gas supply. *(Conclusion #2)*

Inherent in the regulatory environment in which the two companies operate is a considerable potential conflict of interest: the same transaction entered into by NJRES will with great frequency result in more profit to the parent company than if the transaction were entered by the utility company. This conflict creates an incentive to "steer" good transactions to the affiliate, which retains 100 percent of the margin from the transaction, and away from the utility, whose customers receive most of the margin. Utility company and affiliate compensation programs implicitly magnify this incentive by tying personal compensation to their unit's performance, or even to the performance of the parent. The lack of physical separation of the two businesses and the lack of formal policies and procedures governing the operations of the two units expand the potential for this incentive to work against utility interests.

The incentive is compounded by the Company's use of service to the utility as a training ground for the better jobs at the affiliate. Utility personnel are implicitly encouraged to contribute what they can to the affiliate's success because the better jobs are there.

2. Strengthen the staffing of a separated NJNG gas-supply function. *(Conclusion #3)*

The utility gas-supply function must buy effectively for on-system customers, and manage price risk for them as prescribed by BPU requirements, and by the Company's BPU-approved

incentive programs. In addition to these activities, the utility requires an effective wholesale trading function in order to: (a) fit supply to requirements on a day-to-day basis, and (b) realize value for reserve capacity in the secondary market through off-system sales and capacity releases. The individuals currently working for the utility in these functions are doing the best that they can; however, there are too few of them, and they need more training and experience.

It is likely that compensation for individuals in the gas-supply function for the utility will have to look more like that for the wholesale trading affiliate than that for the rest of the utility. Such a disjunction reflects that the gas-supply function for the utility is responsible for roughly two-thirds of the cost of the product delivered to the Company's customers. The utility should be prepared to pay sufficiently to get top talent.

It is possible that certain functions can be shared between the utility and the affiliate. Transportation and exchange (T&E) is one such function. Credit and collection, however, require more separation. What happens is happening now is that, when a counterparty is approaching its credit limit, the utility is required to cut back in its trading with that party, in order to leave room for transacting with NJRES. This is unacceptable, since, presumably, the most active counterparties are the ones that are giving the best terms, and cutting back the utility is tantamount to forcing it to accept worse terms.

3. **Establish specific targets and metrics for each individual.** *(Conclusion # 4)*

NJNG's overall strategic and operating targets are set forth in the strategy and business plans. NJNG would benefit by having individuals know their targets and goals specifically, and having appropriate quantifiable metrics by which they can ascertain their performance on a monthly, quarterly or seasonal basis. The market itself and the procurement and operating data that NJNG generates provide abundant information and data from which to select key metrics to use. The right metrics can be more useful that simply feeling the target is to "make money", "provide reliable service" or "do my job efficiently".

4. **Bring more structure and aggressive scheduling to the preparation of missing process, procedure, and controls documentation.** *(Conclusion #6)*

'Common practice' coupled with a few guiding policy directives and practical 'check lists' for entering data in the GMS and other systems have been substituting for comprehensive, yet practical, documentation. To the company's credit, this lack of documentation has been recognized; now it needs to be addressed in a systematic and practical manner.

5. **Create a structured program and methods for analyzing supply alternatives.** *(Conclusion #7)*

The market and the procurement activities are information and data rich, providing ample opportunity for assessing 'what if' alternatives prior to making a key decision, and 'how did it turn out *vs.* alternatives' after the decision. Doing this kind of thinking will require stepping back from day-to-day duties and giving a fresh look to everything, not just variations on the theme with methodology used for years. Select short courses on problem solving and creative thinking may prove helpful. This process may also help define appropriate individual metrics and appropriate ways to measure the utility's commodity procurement.

An area requiring special attention on this point is analysis of capacity alternatives. As noted above, Liberty could find essentially no formal analysis of capacity alternatives.

6. **Expand the scope of Internal Audit's evaluations of the utility's supply processes.** *(Conclusion #8)*

The scope of IAD's current examinations of the gas-supply function for the utility is not commensurate with the magnitude of the expenditure and the risk of cross subsidization. IAD should conduct periodic operational reviews of the adequacy of gas-supply function policies and procedures to assure a sufficient focus on utility-only focus. IAD should also conduct examinations designed to determine whether those policies and procedures are being followed. Reviews should include sufficient examination of gas-supply transactions, including hedging, to assure the Company's management and the BPU of the integrity of those processes. It may be appropriate to use industry experts to conduct detailed operations reviews, provided that they operate under the direction of IAD.

II. Gas Supply Planning and Forecasting

A. Background

The supply planning process at NJNG has two aspects: upstream of the gate stations, and downstream. Energy Services has responsibility for the upstream portion; Energy Delivery manages the downstream portion. This section addresses the activities of Energy Services. Downstream is addressed in the System Operations chapter of Volume III of Liberty's audit report.

Peak day conditions form the focus of the Energy Services supply planning activities. NJNG's load arises primarily from space heating for residential and commercial customers. This characteristic makes weather and customer numbers the "drivers" for supply planning. The numbers of customers of different types (*e.g.*, residential heating customers, residential non-heating customers, commercial customers) is important as well.

NJNG annually conducts a design-day supply-versus-demand forecast process, usually in April. This activity forms part of the preparations for the annual budgeting process, which occurs in May, and for the BGSS filing, which is due on June 1. The forecast process starts with regressions of sendout at the gate stations that serve each of the Company's two service territories (the Northern Division and the Central Division) against observed weather in each of the territories. Those regressions yield base-load and use factors that NJNG uses with specified design weather conditions and estimated numbers of customers to estimate design-day requirements for each territory. Any short-fall in the amount of peak-day supply capacity required versus that owned and under contract is communicated to management so that the search for additional capacity can begin.

NJNG estimates requirements several years into the future. BGSS filings require design-day estimates ten years into the future, and supply/demand estimates for five years. New supply projects generally require several years of development before deliveries can begin. Forecasts cover at least five years.

A study of regression analysis of the most recent year's daily sendout data identifies usage patterns by season and by division. NJNG combines base-load and use factors from the design-day study with "normal" weather (defined as 20-year averages of daily degree-days) to produce monthly forecasts. The past year's usage provides the basis for forecasting usage by current customers, and the Marketing Department produces forecasts of customer additions within each division to allow for forecasting the requirements of new customers. The number (and load) of daily-metered customers is relatively small, which allows NJNG to account for them explicitly, and add their contribution into the results of the econometric (regression) analysis. The Accounting Department combines these forecasts, and uses them to estimate total monthly sales for the next year. Those estimates are used internally for budget purposes, and outside the Company for things like the Company's BGSS filing.

Liberty assessed NJNG's supply planning and forecasting practices in comparison to standard industry practices, in order to verify:

- That the weather data used were correct
- That the design-day weather assumptions are reasonable according to common industry practices
- That the design-day sendout calculation methodology is reasonable, and that the Company's evaluation of peak-period performance is regular and comprehensive.

Liberty compared NJNG's weather data to monthly data[2] from the National Oceanographic and Atmospheric Administration of the U. S. Department of Commerce (NOAA). Liberty also verified the Company's design-day assumptions by analyzing the historical weather experienced at NJNG's weather stations. Liberty examined the Company's design-day, design-winter and normal-requirements methods as described and calculated in its Peak Day Study/Design Day Overview and its normal weather assumptions.

Liberty's examination of the Company's activities included the following areas:

- Conformity of weather data handling and analysis with industry norms
- Consistency of assumptions, variables and probabilities in capacity planning with observable supply obligations
- Frequency and comprehensiveness of Company evaluations of peak-period performance
- Consistency of gas-supply plans with related elements of corporate planning.

B. Findings

1. Weather Analysis

For supply planning for its Central Division, the Company uses the average of weather data for three NOAA stations: Philadelphia, Newark and Atlantic City. The peak-day design criterion for the Central Division is 64.3667 heating degree-days (HDD), which represents the average of the three measurements on three peak days in January 1994. For the Northern Division, the Company has its own weather station, at Dover, New Jersey. The peak-day design criterion for that area is 69 HDD, which was the measured value on January 19, 1994.

Liberty first spot-checked the data from the weather stations against that in the Company's data base for these analyses. Liberty then examined distributions of the weather data. The next tables show the results of this analysis. Central Division HDDs are for the NOAA stations at Philadelphia, Atlantic City, and Newark. Northern Division. HDDs are for NJNG's weather station at Dover, NJ.

[2] "Spot checked" for various months

Central Division Maximum Daily HDDs, 1966-2006

HDD Date	HDDs			
1/18/1982	67.3		12/25/1983	56.8
1/18/1977	63.4		2/4/1996	56.4
1/21/1985	62.9		2/11/1979	56
1/20/1994	62.4		1/9/1968	55.9
12/26/1980	61.7		1/5/1981	55.7
1/22/1985	60.8		1/16/1994	55.6
1/13/1981	60.2		1/21/1994	55.6
2/18/1979	60.1		1/12/1982	55.4
1/22/1984	60.1		1/19/1994	55.2
12/26/1983	59.9		2/5/1996	55
2/12/1979	59.2		1/15/1988	54.9
1/19/1977	59		2/2/1971	54.8
1/11/1982	58.7		1/17/1977	54.8
2/14/1979	57.9		1/9/1981	54.8
1/9/1970	57.6		1/12/1968	54.5
1/10/1970	57.3		2/10/1979	54.4
1/12/1981	57		1/10/2004	54
1/29/1966	56.9		1/15/2004	54

Central Division HDD Distribution, 1966-2006

	Min	-2 StDev	Average	+2 StDev	Max	StDev
October	106	142	278	415	412	68
November	393	375	541	707	736	83
December	684	624	866	1,108	1,229	121
January	755	714	1,018	1,321	1,367	152
February	670	640	862	1,084	1,179	111
March	546	534	711	888	905	88
April	267	278	395	511	532	58
May	69	47	152	256	320	52
June	2	0	19	45	61	13
July	-	0	1	4	8	2
August	-	0	2	10	21	4
September	12	4	46	88	87	21
Annual	3,964	4120	4,886	5,651	5,586	383

Over the last 40 years, the coldest-day occurrence for the Central Division occurred on January 18, 1982, which experienced an average of 67.3 HDD for the three stations. The second-coldest day was January 18, 1977, with 63.4 HDD. The fact that the maximum values observed are usually[3] more than the average plus two standard deviations suggests that the probability distributions (each month and each year) for this data are normal. The minimum values are usually more than two standard deviations below the mean, however, so the assumption of a normal probability distribution does not hold for the lower values. Assuming a normal distribution, however, the design-day value, 64.3667 HDD, has a probability of occurrence of between 2.5 percent (once in 40 years) and 5.0 percent (twice in 40 years). This value is normal for companies like NJNG.

[3] The exceptions are the month of October, and the maximum for a year.

Northern Division Maximum Daily HDDs, 1977-2006

HDD Date	HDDs			
1/19/1994	69		1/21/1994	61
2/17/1979	66		1/9/2004	61
1/17/1982	66		1/15/2004	61
1/20/1994	66		1/18/1977	60
1/17/1977	65		2/9/1979	60
1/21/1984	64		12/25/1983	60
1/20/1985	64		1/18/1994	60
1/29/1977	63		1/21/2005	60
12/25/1980	63		2/10/1979	59
2/11/1979	62		2/18/1979	59
2/13/1979	62		1/11/1982	59
1/21/1985	62		1/10/2004	59
1/15/1994	62		1/18/2005	59
1/26/1994	62		2/4/1978	58
2/14/1979	61		1/3/1981	58
1/10/1982	61		1/12/1981	58
1/14/1988	61		1/18/1982	58
1/16/1994	61		2/15/1987	58

Northern Division HDD Distribution, 1977-2006

	Min	-2 StDev	Average	+2 StDev	Max	StDev
October	232	259	398	536	556	69
November	522	484	653	821	838	84
December	790	739	1,001	1,264	1,363	131
January	855	816	1,145	1,474	1,467	165
February	762	702	958	1,215	1,272	128
March	623	594	786	978	958	96
April	339	321	439	557	547	59
May	81	58	185	311	297	63
June	6	0	37	77	94	20
July	-	0	1	4	9	2
August	-	0	2	15	24	6
September	-	23	99	174	159	38
Annual	5,043	4859	5,713	6,567	6,504	427

Only 30 years of data is available for NJNG's Dover Station. The coldest days in that period were January 19, 1994, with 69 HDDs, and February 17, 1979, January 17, 1982 and January 20, 1994, each with 66 HDDs. For both divisions, seven out of the ten coldest days were in January. Again assuming normal probability distributions for this data, NJNG's design criterion for the Northern Division (69 HDD) has a probability of occurrence of 3.3 percent (once in 30 years). This is also a normal value for a company like NJNG.

2. Design-Day Requirements Estimates

The Company's annual 'Peak Day Study' incorporates five separate methods to evaluate design-day requirements and generate customer numbers, base-load and use factors and sendout projections:

- "Straight-line" method: The rate of projected customer growth is used to calculate peak-day growth for subsequent years
- Base-load and use factors: A forecast based on base-load and use factors by rate class for January (using January's budget data), is multiplied by the number of forecasted annual customers in each class and design-day HDDs
- Growth by customer class: Growth for subsequent years is calculated based on incremental peak-day additions calculated from customer growth by rate class.

- Average customer method: A forecast based on base and use factors for an average customer for January (using January's budget data), multiplied by the total number of forecasted annual customers and design-day HDDs same as (2), with all customers aggregated as one.
- Same as (3), with all customers aggregated as one.

NJNG conducts these evaluations separately for the two divisions, in order to capture accurately the usage characteristics of the two sets of customers. The Company projects design-day firm demand by combining the regression results (modeling the most recent customer usage patterns, and yielding firm demand forecasts for given HDD levels) with the forecast of customer additions as reflected in monthly sales forecast data. Judgment is applied in picking a value for design-day firm demand from among the five different methods. The selected value is not simply an average of the five. NJNG then matches the selected value against existing supply contracts for each division to estimate the amount and timing of a potential supply shortfall.

3. Design Winter Requirements Estimates

The Company uses a cold-weather year and a warm-weather year to test the efficiency of different combinations of capacity options in serving its load. NJNG multiplies the daily degree-days in those years by current use factors and customer numbers to develop load curves for the specified weather conditions. The years used are the coldest one in the last 20 years, and the warmest one in the last 20 years. NJNG Staff could not recall which years are used, but the weather used for both come from actual experience, rather than being developed from some composite of months from different years.

The Company does not perform quantitative tests of supply portfolio "fit." It considers the dispatch models required for quantitative tests not to merit the time and effort required to keep them current.

4. Normal Requirements Estimates

An annual sales forecast is prepared as part of the budget process every year. A forecast of monthly tariff sales is developed by the Accounting Department. That forecast is based on the current year's sales (adjusted to normal weather), plus the Marketing Department's forecast of customer growth. Marketing's growth forecast is disaggregated into growth in each supply region on NJNG's distribution system, considering both expected new-customer locations and the configuration of NJNG's system.

The regression analysis of the most recent year's daily sendout data is also used to identify the usage patterns by season for each of the two divisions. The incremental base-load and degree-day use factors for the customer growth developed in the design-day study are combined with the seasonal regression data to identify "normalized" daily sendout requirements. ("Normal" is based on 20-year averages of daily degree-days.) The seasonal forecast equations also provide ranges of daily and monthly demands for dispatch planning. The ranges are based on maximum and minimum temperatures experienced for each day during the month being considered, and colder-than-normal and warmer-than-normal experience for that month.

Just prior to the beginning of each month, Energy Services personnel hold a supply-setup meeting to plan the optimal dispatch strategy for that month, considering current weather forecasts, current futures prices for natural gas, the status of Company storages, pipeline operating conditions, third-party supplies for transportation customers, and any other factor that might influence dispatch for that month. A more extensive meeting considers the same factors at the beginning of each season, and produces a more general plan for the season as it begins.

5. Actual versus Projected Resource Usage Measurement

NJNG does not formally track supply resource usage at less-than-design conditions. Moreover, detailed analysis of actual resource utilization versus plan is not tracked. Over/under cost-recovery performance, as reported in the Company's annual BGSS filing, is considered adequate for formal analysis purposes. Energy Planning personnel (within Energy Services) compare forecasted to actual portfolio performance, especially under peak-load conditions, as a matter of professional interest, but do not keep a record of these evaluations.

Liberty reviewed predicted versus actual daily sendout over the last five years. That review showed a pattern of increasing over-deliveries over the period, from three days during the winter of 2001/2002, to 36 days during the winter of 2005/ 2006. During this period, Gas Control began using a neural network forecasting tool. That tool uses the observed relationship between atmospheric temperature and daily sendout to estimate requirements for the next few days. Fiscal 2006, in particular, experienced rapidly increasing prices due to the hurricanes (third and fourth calendar quarters of 2005), then warmer-than-normal weather conditions in early (calendar) 2006. The Company observed that the over-forecasting was probably a result of changes in use patterns that occurred as a result of those changes in prices and weather.

6. Assessment of Future Conditions

Supply planning at NJNG is driven by the Senior Vice President's assessments of current events in the North American gas markets, and his sense of future directions in those markets. Currently, the Company is working on increasing its access to gas markets in the Midwest U. S. The Company contracted for some capacity in ANR Pipeline Company's storage facilities in Michigan, with associated re-delivery transportation via Tetco's Lebanon Lateral. NJNG has also increased its access to Midwest markets through participation in Tetco's Texas Eastern Market Area Expansion (TIME) I and TIME II projects.

The Company has also increased its emphasis on supplies from storage, viewing storage as a means of mitigating market volatility and improving supply security. Moreover, as the cost of gas increases, the pipeline-fuel charges associated with long-line pipeline transportation shift the balance in delivered costs away from long-haul pipeline transportation and toward storage and short-haul pipeline transportation.

Liberty heard these themes for supply planning repeatedly, but was provided no documented analysis of them.

7. Integration of Gas-Supply Planning

The parent company uses a three-year strategy/business plan process, conducted each year. This process produces a detailed plan for the immediate next year, and broader targets for the following years. The process is broadly based, and includes the Supervisor, Energy Planning from Energy Services. That same individual is responsible for gas-supply planning. This linkage provides sufficient coordination between gas-supply planning and broader corporate planning.

C. Conclusions

1. The Company's weather data handling and analysis methods are consistent with industry norms.

The Company's use of an average of three NOAA stations around its Central Division, and its own station for the Northern Division, is reasonable. The data tracked by the Company was of sufficient duration (40 years for the Central Division, and 30 years for the Northern Division) to provide a reasonable basis for analysis going forward.

Liberty's analysis of the Company's weather data suggests that its peak-day design criteria for its two service territories, 69 HDD for the Northern Division and 64.3667 for the Central Division, are appropriate.

2. Assumptions, variables and probabilities for peak-day capacity planning are reasonable.

The Company's various assumptions and methodologies for its peak-day studies are reasonable, and well documented in its annual peak-day studies. The Company's five methods for its peak-day studies provide reasonable bounds on the peak-period demand that the Company is likely to face.

3. The Company does not evaluate its peak-period performance. *(Recommendation #1)*

NJNG does not track the performance of particular supply assets, or the performance of the supply-capacity portfolio as a whole, during periods of peak sendout (other than to observe whether there were supply interruptions). The Company's Energy Planning section looks at performance informally, as a matter of professional interest, but this analysis could easily be formalized and made a part of each year's peak-day study. There should be little additional cost in formalizing these analyses, since they are being done informally now, and a more-formal analysis should yield insights into recent developments such as changes in the characteristics of customer usage.

Since customer usage is not evident in portfolio performance, the Company performs a sendout regression analysis regularly to gauge overall usage characteristics. Customer use factors are often somewhat different in peak-period usage from what they are in other parts of the relationship between weather and sendout. More careful study of use factors at times of peak demand should improve the Company's confidence in its estimates of peak-day capacity requirements.

4. **NJNG does not conduct analyses of portfolio performance on a seasonal or annual basis.** *(Recommendation #2)*

The Company does not perform portfolio optimization studies. The Company is continually adjusting its capacity portfolio on the basis of qualitative arguments about the benefits of certain capacity, but these arguments are not backed by quantitative analysis.

5. **Gas supply planning is consistent with other elements of corporate planning.**

As noted above, the person responsible for gas-supply planning is also one of Energy Services' representatives to the corporate planning process. This linkage promotes coordination and consistency.

D. Recommendations

1. **Include evaluations of performance in peak-day studies.** *(Conclusion #3)*

The Company's peak-day studies are a routine part of its annual planning cycle. Those studies are primarily oriented toward producing a forecast for including with its BGSS filing. After-the-fact evaluations of peak-period portfolio performance are now conducted informally by the Energy Planning group within Energy Services. These evaluations should be formalized by making them part of the annual peak-day studies. An important benefit of the recommended change should be an improved understanding of customer behavior during periods of peak demand.

Liberty also recommends a methodological change for the peak-day studies. The Company now bases its forecasts on regression analysis of daily sendout versus daily weather (HDD) data for the most recent year. In Liberty's experience, this method can result in reduced sensitivity to peak-day conditions if the most recent year was unusually warm or mild. This limitation can be remedied by augmenting the peak-day analysis with regressions of sendout against an average of the most-recent three to five years, rather than just the most recent year.

2. **Begin to conduct portfolio optimization analysis.** *(Conclusion #4)*

At present, the Company does not have the capability to perform this type of analysis. Even if the Company develops a simple optimization model of its own, rather than contracting for one of the commercially-available ones, it must do something. To continue to make long-term capacity commitment decisions on the basis of instinct, or of perceived market trends, etc., is unacceptable. If market trends are genuine, they will show up in basis differentials, or in other market measures that will drive portfolio optimization toward the expected results.

Portfolio optimization analysis should also be helpful in negotiating with providers of capacity. Detailed portfolio analysis should provide support, for example, for determining how much fuel-retention percentages would have to change to offset storage charges. The providers of capacity, with whom NJNG is negotiating on these questions, certainly maintain and use these capabilities; for NJNG to negotiate with them on the basis of instinct or perception is to accept a significant disadvantage in those negotiations.

III. Management of Transportation and Peaking Assets

A. Background

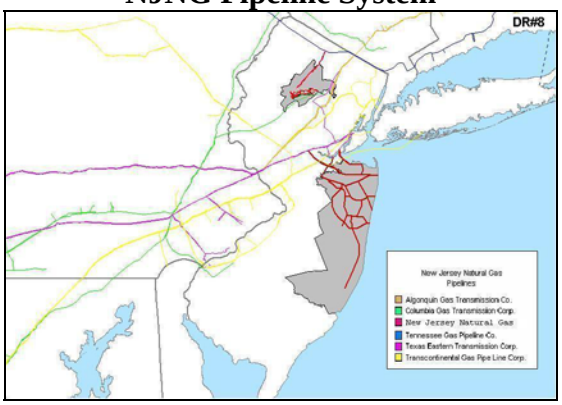
The locations of NJNG's serving areas relative to the locations of major gas pipeline facilities determine how the company serves those territories, structured essentially as follows:

- Five gate stations serving the Central Division (containing most of the customers)
  - One very large gate station on the main line of the Tetco system
  - Two gate stations on the Transcontinental Gas Pipe Line Corporation (Transco) system
- Two liquefied natural gas (LNG) storage and redelivery facilities serving the Central Division
  - One at Howell, just north of the geographic center of the Central Division
  - One at Stafford, at the downstream (southern) end of its high-pressure system
- Five gate stations serving the Northern Division
  - One gate station on the Algonquin Gas Transmission Company (ALG) system
  - One gate station one at the northeast end of the Columbia Gas Transmission Corporation (TCO) system
  - One gate station on the Tennessee Gas Pipeline Company (TGP) system
  - Two gate stations on a lateral off of the Texas Eastern Transmission Corporation (Tetco) system

The next figure shows the location of the Company's service territories, the locations of the pipeline systems and LNG facilities that serve them, and the locations of the principal high-pressure (transmission) lines behind the Company's city gates. The facilities depicted on the figure deliver gas to and within the Company's distribution system. Upstream of those facilities, however, the Company takes gas from natural gas storage and transmission facilities that deliver gas into the systems shown on the map. The principal upstream facilities include:

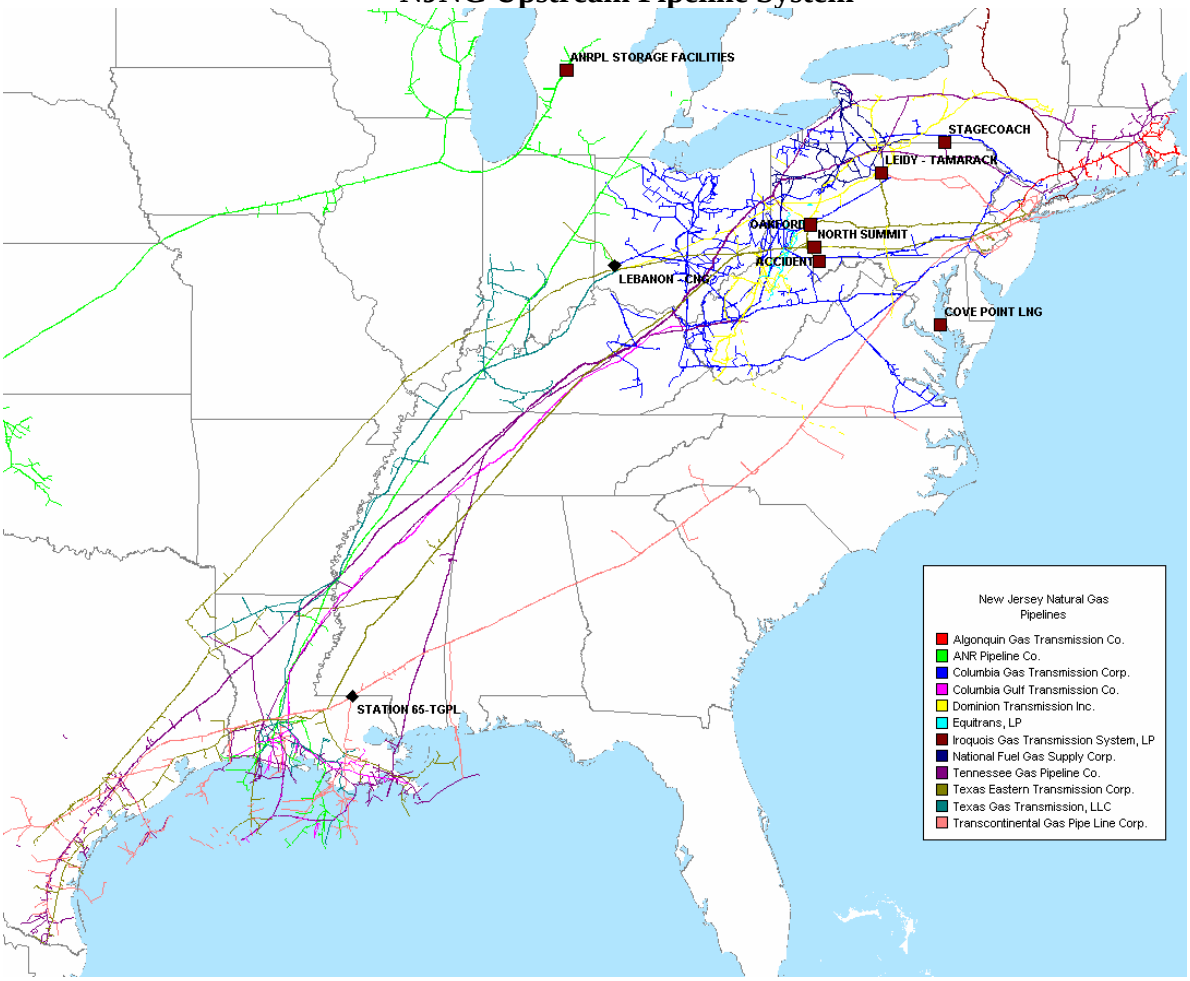
- Storage facilities on the Dominion Transmission, Inc. (DTI) system, which deliver to NJNG's city gates via the Transco and Tetco systems
- The Stagecoach Storage facility, which delivers into the TGP system
- Storage services from ANR Pipeline Company, which delivers via the Tetco system
- Storage services from Transco and Tetco, whose pipeline systems make redeliveries to NJNG from storage
- Contracted transportation service on the Iroquois Gas Transmission Company (IGT) system, which delivers to NJNG's service territories via displacement.

NJNG Pipeline System



The following figure shows the upstream systems.

NJNG Upstream Pipeline System



Liberty's examination in this task focused on the efficiency and effectiveness of the Company's use of its portfolio of gas-supply assets in serving its customers. Use of the portfolio to serve on-

system customers formed the primary consideration, but Liberty also analyzed secondary-market activities. Liberty reviewed:

- Consistency with quality and reliability objectives
- Identification and use of sufficient numbers and types of vendors
- Development of alternate sources of supply
- "Fit" between capacity profile and load duration curve
- Primacy of the interests of on-system customers
- Consistency of performance with supply plans and supply asset specifications
- Aggressive marketing of unutilized assets.

B. Findings

1. Capacity Portfolio

Prior to the issuance of the FERC's Order 636 in 1992, the Company had supply-service agreements with the various pipelines connected to its city gates. Implementation of Order 636 provided NJNG with assigned capacity on various transportation and storage facilities that the pipelines had used to provide NJNG supply services. The Company was in the process of rationalizing that portfolio of assigned capacities in October 1998; *i.e.*, eliminating contracts that were not critical to supplying its service territories, and concentrating its capacity holdings on the more important systems.

By that time, considerable interest in unbundling at the retail level had already arisen. NJNG expected that unbundling process to result in a reduction in requirements for capacity to its city gates, as some portion of its customers "migrated" from Company-provided supply to supply from third-party marketers. This migration would reduce NJNG's required portfolio upstream of its city gates because marketers would begin to provide capacity required for serving migrating customers.

The Company, BPU Staff, the Ratepayer Advocate and other interested parties worked intensively through 1998 to establish a framework for third-party marketers' access to customers on NJNG's system. Those efforts culminated in a Global Settlement approved by the BPU in September 1998. That Settlement gave all of NJNG's customers an opportunity to choose a supplier by January 1, 1999.

The Global Settlement included a program to assist NJNG in reducing the amount of city-gate delivery capacity under contract. To prepare for that reduction, the BPU and the Company worked out a Capacity Reduction and Portfolio Enhancement incentive Program. The program sought to reduce the fixed costs applicable to NJNG's gas cost in anticipation of lower utility sales requirements. The next table lists the various portfolio changes undertaken as part of the Capacity Reduction and Portfolio Enhancement Program.

Capacity Reduction and Portfolio Enhancement Program

Contract Change	Effective Date	Capacity	Nature of the Change
Tetco contract no. 820006	Nov-98	15,476 Dth/day	Termination effective October 31, 2000
Supplier Demand Reductions	Oct-98		Negotiated lower demand fees without deliverability reductions
CNG Conversion	Jan-99	10,000 Dth/day, 300,000 Dth capacity	Upstream transportation converted to upstream storage
Tetco contract no. 800344	Aug-99	27,000 Dth/day	Termination effective October 31, 2000
Texas Gas Phase 1	Nov-99	10,000 Dth/day	Permanent release in exchange for an equivalent sales service at Lebanon, Ohio
Texas Gas Phase 2	Apr-00	21,644 Dth/day	Permanent release in exchange for an equivalent sales service at Lebanon, Ohio
Equitrans Storage	Apr-01		Terminated storage service and associated transportation
Tetco FTS Conversion	Nov-01	1,060 Dth/day	7© transportation service converted to open-access FT-1
Tetco FTS4 Conversion	Nov-01	40,000 Dth/day	7© transportation service converted to open-access FT-1
WLA-M3/M2-M3 (TIME)	Nov-02	100,000 Dth/day	Released long-haul capacity, replaced with M2-to-citygate transportation service
Boundary/Stagecoach	Feb-03		Canadian supply from Boundary Project terminated and replaced with storage service from Stagecoach

By late 2002, however, NJNG understood that it had not lost, nor was it likely to lose, substantial load to third-party marketers, at least in the short run. The Company actually experienced "reverse migration;" *i.e.*, customers returning from third-party suppliers to NJNG system supply. The combination of that return and continuing growth in the number of customers for gas service in the Company's service territories caused NJNG's need for capacity to grow. That growth has continued; NJNG has recently added over 10,000 customers per year, which produces an approximately 17,000 Dth increase in peak-day requirements each year. NJNG has made several increases in delivery capacity on the TGP and Tetco systems to accommodate increased loads that have resulted primarily from the addition of new customers in its Northern and Central Divisions.

Some of the Company's recent capacity-contracting decisions have added geographic diversity as a criterion in sourcing for its supplies. For example, the Company added storage and transportation services on the ANR Pipeline system in 2005, providing access to the Chicago Hub for the first time. Similarly, the Company amended one of its storage contracts with DTI in 2006 to allow access to supplies of world-market LNG from the receiving facility at Cove Point, Maryland.

The next table shows the evolution of the total amount of supply capacity owned by and under contract to the Company over the audit period. The results of the Capacity Reduction and Portfolio Enhancement incentive Program appear in the changes listed in the early years of the period; the Company's efforts to accommodate the growth in its load show in the later years.

NJNG Supply Capacity

Capacity Source	FY1999	FY2000	FY2001	FY2002	FY2003	FY2004	FY2005	FY2006
Pipeline Capacity	96.6	96.6	91.7	105.6	97	108.3	115.3	107.7
Storage Withdrawals	17.2	17.2	16.5	16.5	19.3	19.3	19.7	22.8
LNG Peaking Supplies	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
Total	114.7	114.7	109.1	123	117.2	128.5	135.9	131.4

Volumes in (MMDth)
Source: Annual supply/demand forecasts from LGA/BGSS filings, supplemented by Company analysis.

2. Peaking Facilities and Contracts

The Company is fortunate to have peaking facilities in strategic locations in its larger, Central Division. The larger of the two facilities (Howell) is near the center of the Division. The other facility (Stafford) is located at the downstream end of the Company's high-pressure system. The two facilities together provide only about 17 percent of the Company's peak-day capacity requirement, but their availability and locations have forestalled any requirement for contract peaking services.

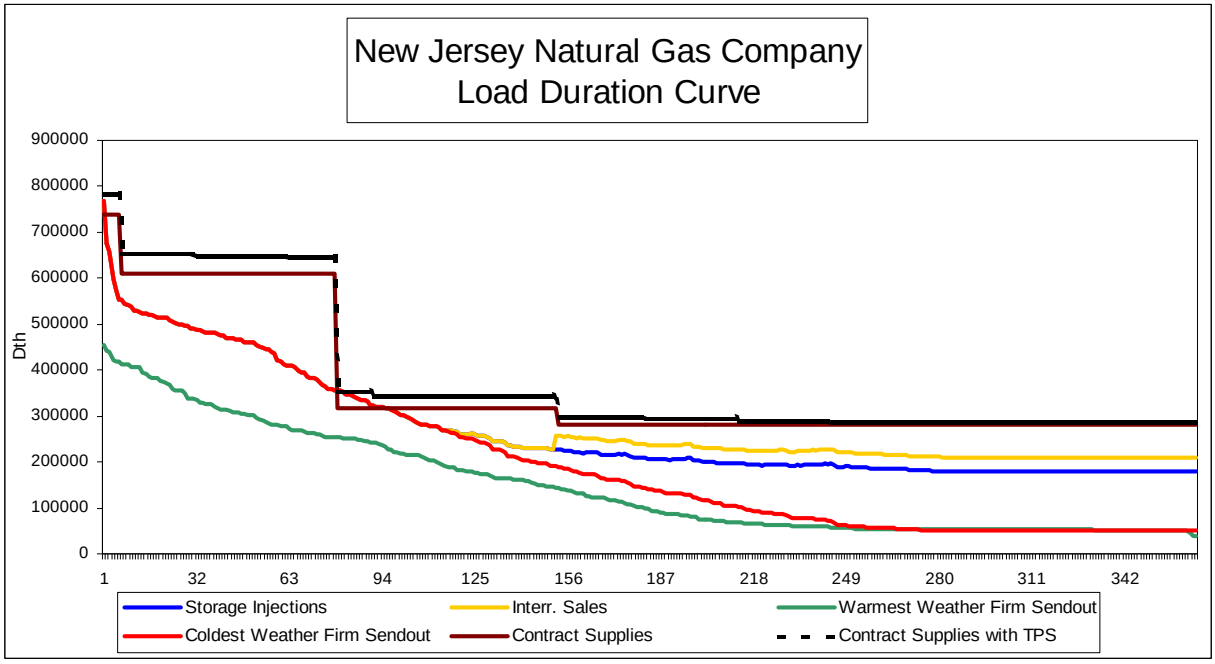
The reported annual increase[4] in peak-day supply requirements of about 17,000 Dth each year will put increasing stress on NJNG's asset portfolio. The Company's latest BGSS filing shows a small shortage of peak-day capacity, starting in 2008. The Company also reports, however, that higher gas prices over the past two years have affected customer usage, and therefore the Company's supply requirements. The uncertainty produced by recent trends in customer use has made it likely that NJNG will perform additional study of customer requirements before acquiring additional peak-day supply capacity.

3. Capacity Profile "Fit"

The next figure shows the Company's capacity profile superimposed on its design-weather and warmer-than-normal weather load duration curves. The capacity profile shown includes some year-round capacity on the Tetco (30,000 Dth/day) and IGT (20,000 Dth/day) systems that NJNG has recently been released to affiliate NJRES as part of the LDC's "Conservation Incentive Program." The figure shows that these two capacity releases have the effect of improving the "fit" between the capacity profile and the Company's load duration curves.

[4] See, *e.g.*, the Company's BGSS Filing for FY 2007, at p. 9 of Mr. Shields's testimony.

Capacity Profile Fit



Source: Response to DR No. 446

Winter-period services comprise another area where NJNG could further improve this fit. The preceding figure shows some excess supply capacity during the winter period. The Company reports that higher prices for natural gas have made stored gas as a winter-period supply source the economical choice, because the fuel retention associated with long-line transportation has become a large cost relative to facilities charges. Using storage as a winter-period supply source also provides more opportunity for avoiding winter-period price volatility; *i.e.*, it allows NJNG to serve customers with gas purchased during the previous summer.

4. Affiliate Influences

The Company's wholesale marketing affiliate, NJRES, occasionally has some interest in the Company's capacity contracting decisions. For example, NJNG contracted in 2002 for capacity in the Stagecoach Storage facility. NJNG contracted for additional storage capacity in that facility in 2004 and 2005. NJRES served during this period as the exclusive marketing agent for capacity in that facility. NJNG has subsequently renewed storage services at Stagecoach when NJRES had no marketing role. More recently, NJNG has released capacity on the TETCO and IGT pipeline systems as part of its CIP. NJNG released that capacity to NJRES. Under an agreement with the parties to the CIP proceeding, this capacity was released subject to a call-back right to supply priced at an index (Gas Daily Average) for the relevant location, but without any demand charges.

NJNG reports that it reviewed details of these decisions with the BPU Staff and the Ratepayer Advocate. NJNG's management views these affiliate relationships as providing benefit to the utility. Management believes that NJNG and NJRES conduct these arrangements on market

terms, under which NJRES typically provides a service that NJNG might otherwise have difficulty finding.

5. Improvement in Contract Terms and Conditions

The period addressed by this audit (fiscal 1999 through 2006) has witnessed active negotiation with providers of transportation and storage services. Implementation of restructuring pursuant to FERC Order 636 was continuing on all pipeline systems, and the first rounds of contracts signed as part of that restructuring began to expire. NJNG has used these negotiations to pursue rationalization of its capacity portfolio, including elimination of minor storage and transportation contracts that did not have value from a longer-term perspective.

NJNG also used the occasions of these negotiations to improve its access to alternative gas supplies. Improvements included relinquishing some long-line transportation services giving access to areas already reached by other parts of the portfolio, in favor of access to nearby market centers and storage facilities. The Company has also sought access to new supply areas by contracting for transportation capacity that connects them to market centers served by those areas. For example, NJNG added ANR storage and transportation services, which provide access to the Chicago Hub in 2005, and secured in 2006 amendment of one its contracts with DTI to provide access to LNG supplies from Cove Point, Maryland.

6. Peak-Period Performance

The Company uses a design criterion of 69 HDD for its Northern Division and 64 HDD for its Central Division. Those weather conditions occurred in 1994. More recent winters have been warmer. The next table, taken from the Company's 2007 BGSS Filing, shows the five coldest days experienced in each of the three winters preceding that June 1, 2006 BGSS filing. The table shows that the coldest day in that period (54 HDD) fell far short of the design criterion. The highest sendout in those three years was 625,014 Dth, on January 15, 2004. That sendout was well below the peak-day capacity of the Company's portfolio, which was 785,770 Dth. The Company operated its LNG peak-shaving facilities on that day, however.

Peak-Period Performance of Gas Supply Assets

		Northern Division					Central Division									
Month	Day	Texas Eastern	Algonquin	Tennessee	Columbia	NORTH	Texas Eastern	Transco	NJNG LNG	Central	Total Sendout		North Interr.	Central Interr.	Electric Generation	Firm Sendout
Jan-06	15	51,028	3,025	24,868	7,890	86,811	400,283	33,663	19,122	453,068	539,879	on	2,480	7,439	7,194	522,765
Dec'05	14	42,563	4,704	35,869	3,313	86,449	386,673	37,297	676	424,646	511,095	on	2,936	8,809	0	499,350
Dec'05	13	39,096	6,006	35,225	3,306	83,633	382,094	37,739	676	420,509	504,142	on	2,837	8,512	1,550	491,243
Feb'06	18	39,674	7,687	30,320	2,326	80,007	371,753	36,914	10,225	418,892	498,899	on	2,073	6,218	0	490,609
Feb'06	26	35,568	7,080	35,419	2,349	80,416	375,080	36,446	352	411,878	492,294	on	2,311	6,932	0	483,051
Jan'05	18	48,683	9,721	31,800	4,561	94,765	374,013	39,871	95,945	509,829	604,594	off	15	44	53	604,482
Jan'05	23	40,286	13,529	26,830	9,743	90,388	407,437	39,438	52,246	499,121	589,509	off	10	31	171	589,297
Jan'05	27	40,966	8,731	31,850	9,477	91,024	408,814	43,909	45,249	497,972	588,996	off	1	4	325	588,666
Dec'04	20	41,045	12,286	37,054	2,414	92,799	417,497	39,798	33,996	491,291	584,090	off	584	1,752	0	581,754
Jan'05	21	41,552	10,662	31,340	9,649	93,203	422,795	51,588	13,309	487,692	580,895	off	3	9	167	580,716
Jan'04	15	35,467	12,977	39,954	9,839	98,237	406,624	55,685	64,468	526,777	625,014	off	305	0	0	624,709
Jan'04	10	43,380	12,650	35,119	2,358	93,507	433,212	35,589	54,686	523,487	616,994	off	441	0	10	616,542
Jan'04	24	37,341	10,630	35,579	4,869	88,419	430,459	46,854	11,098	488,411	576,830	off	10	32	0	576,788
Jan'04	9	38,595	14,152	35,791	2,355	90,893	428,163	41,391	6,792	476,346	567,239	off	368	0	39	566,832
Jan'04	23	38,588	6,024	34,859	4,881	84,352	438,736	36,662	4,986	480,384	564,736	off	0	0	21	564,716

The Energy Planning area within the utility segment of Energy Services evaluates portfolio performance carefully after each significant weather event, and after each winter. The company uses these evaluations to adjust requirements for portfolio performance as necessary in response to changes in parameters such as customer use factors.

7. Secondary-Market Program

NJNG operates an active secondary-market program. The next table shows the volumes and margins realized through the program for the audit period. The table shows that the volume of capacity releases declined considerably after fiscal 2000, and the volume of off-system sales declined considerably after fiscal 2002. The Company reports that the reason for both declines is the reduced capacity available for these activities as a result of the Capacity Reduction and Portfolio Enhancement Program. Fiscal 2003 was much colder than fiscal 2002, which required more of the capacity under contract to serve the Company's load in the later of those two years.

Secondary-Market Programs

	Off-System Sales		Capacity Release		Total	
Fiscal Year	**Volume** (MMDth)	**Margin** ($MM)	**Volume** (MMDth)	**Margin** ($MM)	**Volume** (MMDth)	**Margin** ($MM)
1999	95	13.5	48.6	9.3	143.6	22.8
2000	96	13	36.2	4.4	132.2	17.4
2001	80.6	9.4	7.8	3.4	88.4	12.8
2002	91.6	13.4	4.9	2.9	96.5	16.2
2003	30.8	6.5	5	2.8	35.8	9.3
2004	42	16.3	4.3	2.8	46.3	19.1
2005	46.1	24.4	5.9	3.1	52	27.5
2006	34.1	21.3	3.5	2.6	37.5	23.9

NJNG policy favors using available capacity to make off-system sales, rather than to release it. The premise of this policy is that greater value can be realized for customers through off-system sales, rather than capacity releases.

C. Conclusions

1. The Company has moved aggressively to rationalize its capacity portfolio.

NJNG has made many adjustments in its capacity portfolio over the audit period. The level of this activity indicates the high priority that NJNG places on it. The nature of the changes demonstrates that NJNG has conducted negotiations over them with a consistent strategic view.

The Capacity Reduction and Portfolio Enhancement Program served as an important contributor to this activity. The program gave shareowners a portion of the savings when it could reduce capacity costs. That program ended in 2004. Portfolio-adjustment activity continues, but at a more moderate level.

2. NJNG does not adequately document its analysis of capacity-commitment decisions. *(Recommendation #1)*

The Company reports that it makes capacity-commitment decisions in accordance with its view of "where the markets are going". Liberty understands the influence of market trends on these decisions, but considers overwhelming reliance on "strategic sense" not to be an adequate substitute for more structured analysis.

The capacity providers who act as counterparties for the Company's negotiations about capacity will also have a view of the same market trends, and that view will affect their negotiating positions. For example, when providers of long-line transportation capacity observe that the fuel-retention percentage is hurting their competitive position vis-à-vis storage, they will likely adjust their percentages in order to improve their position.[5] Liberty's concern is that, if the Company has not carefully analyzed the trade-offs in these parameters in terms of their effects on the cost of gas delivered to the Company's city gates, its decisions regarding which alternative to choose may prove sub-optimal.

Liberty understands the Company's argument about the potential benefits of supply diversity. Liberty accepts that physical supply-source diversification is an important tool in maintaining supply security. The weather events of August and September 2005 and the anticipation of a period of more-intense hurricane activity over the next few years make the Company's interest in diversifying its sources of supply away from the Gulf Coast Producing Region appropriate. Given that starting point, however, Liberty was surprised to see that NJNG released capacity on a system with access to Canadian supply (IGT) as part of the recently-approved CIP. The Company explained that IGT does not deliver directly to NJNG, and the associated supply contract has expired. The Company replaced this IGT position with a city-gate peaking supply. The Company also reported that the release and replacement supply were reviewed extensively with the BPU Staff and Rate Counsel before being approved in the BPU Order adopting the CIP.

[5] Indeed, this has already happened with the Company's largest capacity provider, Texas Eastern.

Market-center prices in different areas of the U. S. reflect patterns of competition among different sources of supply, and incorporate transportation costs from those centers to major producing and consuming regions. Those prices and the relationships among them comprise important inputs to analysis of an optimal capacity portfolio for NJNG. Liberty does not question how the Company uses this information in its choices among capacity alternatives. Rather, the concern is in the sufficiency of the documentation supporting the underlying analysis.

3. The "fit" of the Company's capacity portfolio has improved, but remains sub-optimal. *(Recommendation #2)*

NJNG has recently released some 365-day transportation capacity as part of its CIP. That change should improve the fit between its capacity portfolio and its load duration curves, thereby reducing the amount of capacity owned or under contract but not required in order to serve the Company's firm customers (excess, or "reserve" capacity).

Visual examination of the capacity-fit figure from the findings section suggests that further improvements could be made. In particular, the Company could increase its contracts for peaking, and 30- or 60-day storage services, and reduce its volume of winter-period (75-day) storage services. The Company argues that the longer-duration services have other benefits, including physical supply security, and protection from price volatility. Those arguments have conceptual merit; however, NJNG has not supported them with structured, quantitative analysis of the trade-offs involved.

4. The common NJRES and NJNG structure creates an unacceptable potential for affiliate influence on NJNG's capacity-contracting and capacity-management decisions. *(Recommendation #3)*

The two prominent examples of the presence of the affiliate in the Company's capacity-commitment decisions are: 1) contracting for capacity in the Stagecoach Storage facility, for which the affiliate served as marketing agent, and 2) releasing pipeline capacity to the affiliate as part of the Company's CIP. A third, related concern is the affiliate's role in providing gas supply to the utility as it has adjusted its sourcing. This role is discussed in a subsequent chapter of this report, which addresses affiliate transactions. The affiliate also has under development other projects, for which the utility may become a customer.[6]

NJRES's senior management concedes that the utility's needs are an important "driver" for the affiliate's activities. Liberty's concern is whether the reverse is also true, that the affiliate's business opportunities end up driving, or at least influencing, the utility's capacity-commitment decisions. Because the supply activities of NJNG and NJRES are managed together, and because there is no documented assessment of any capacity-commitment decisions, it is impossible to tell which is the driver and which is "being driven".

5. Evaluation of NJNG's supply portfolio performance constitutes a notable strength.

[6] Two projects that have been announced are a Lebanon Connector pipeline that would connect interstate pipelines in Illinois and Indiana to the Tetco system, and a natural gas storage facility being developed in Bedford County, Pennsylvania, by a partnership between NJR Steckman Ridge Storage and another subsidiary of Tetco's parent, Spectra Energy Corporation.

The utility segment of the Energy Services organization evaluates carefully the behavior of customer requirements and performance by the supply portfolio after every significant weather event. Accurately forecasting sendout in response to weather phenomena is a point of pride in the Energy Planning section.

Energy Planning also identifies potential changes in the portfolio that might make it more efficient in serving utility customers. These potential changes are conveyed to senior management in Energy Services for possible future action.

6. The Company's secondary-market program has declined. *(Recommendation #3)*

The next table shows (in MMDth) how the capacity resources available to the utility have changed over the audit period as the portfolio has evolved to provide a better fit to NJNG's demand profile. Available deliverability includes both capacity owned and under contract to the utility, and capacity provided by third-party marketers supplying customers behind NJNG's city gates.

Capacity Availability and Use

	1999	2000	2001	2002	2003	2004	2005	2006	2007
Available Deliverability									
- Pipeline Capacity	96.6	96.6	91.7	102.7	97.0	108.3	107.7	107.7	107.7
- Storage Withdrawals	17.2	17.2	16.5	16.5	19.3	19.3	22.8	22.8	22.8
- LNG Peaking Supplies	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
- Firm Transport Supplies	9.4	10.6	9.3	7.0	10.4	8.4	7.6	7.3	7.8
- Interruptible Transport Supplies	4.4	3.8	4.0	4.2	3.7	3.5	3.5	3.0	4.4
- Cogeneration Transport Supplies	0.3	0.8	0.3	0.2	0.2	0.4	0.5	0.4	3.7
- Total	128.8	129.9	122.7	131.5	131.5	140.8	143.0	142.1	147.3
Capacity Disposition									
- Firm Demands (sales & transp.)	50.9	54.2	60.8	50.9	67.5	63.3	62.6	57.2	67.6
- Storage Injections	17.7	19.9	16.8	19.1	20.0	19.3	29.7	20.9	23.9
- Interruptible Demands (sales & transp.)	9.8	9.5	11.6	11.1	7.4	9.0	9.7	7.2	10.9
- Off-System Sales	95.0	96.0	80.6	91.6	30.8	42.0	46.1	34.1	39.8
- Storage Incentive Sales	-	-	-	-	-	0.8	0.4	0.9	0.0
- Capacity Release	48.6	36.2	7.8	4.9	5.0	4.3	5.9	3.5	4.2
- Company Use and UFG	0.7	0.4	0.3	0.2	0.7	0.6	0.7	0.4	0.9
- Total	222.8	216.3	178.0	177.9	131.5	139.3	155.1	124.1	147.2
Unused Capacity	-94.0	-86.4	-55.3	-46.4	0.0	1.5	-12.1	18.0	0.1

Sources: LGAC/BGSS filings for availability data; Company-supplied information for disposition; 2007 entries are from BGSS Plan

The table shows how NJNG has used the available capacity for sales, transportation and storage-injection requirements, and secondary-market activities (off-system sales and capacity release). Available capacity and on-system sales and transportation have each increased by about 18 million Dth over the audit period. Secondary-market activities, on the other hand, have declined to about one-third of what they were at the beginning of the audit period, from nearly 144 million Dth in FY1999 to an estimate of about 44 million Dth for FY2007.

The previous table in this chapter (at the end of the Findings section) shows that, even though secondary-market volumes in FY2006 were only 26 percent of what they were in FY1999, margins were slightly higher, presumably due to higher basis differentials and the higher overall level of gas prices. The trend in Unused Capacity in the table above suggests that secondary-market volumes could be increased, and thus higher margins realized, if the capacity portfolio was marketed as aggressively as it was in the early years of the audit period.

D. Recommendations

1. **Perform and document structured analyses of significant capacity-commitment decisions.** *(Conclusion #2)*

When the Company is faced with capacity-commitment decisions, it should perform rigorous analysis of alternatives. Such analysis often uses portfolio-optimization computer programs, either developed in-house or purchased from one of several software vendors. Such an analysis would usually produce estimates of total gas demand and commodity costs over some period, usually a year or a period of years. The estimates would then support a comparison of alternatives. Multiple simulations would compare total costs among different alternatives, to see which of the alternatives results in lower total costs.

Optimization analysis usually requires assumptions that can be tested. If the Company is considering relinquishing upstream pipeline capacity in favor of short-haul storage-area to market-area transportation, for example, the history of basis differentials between receipt points in the two areas can be studied and compared to the cost of the upstream transportation.

Proper optimization analysis usually also requires testing the sensitivity of the results to key assumptions. Continuing the example given above, a proper sensitivity analysis would assess the trade-offs between production-area and storage-area supply access over a range of basis differentials. The behavior of the benefits over a reasonable range of differentials would be a key input to the decision.

Liberty recommends that the Company conduct such an analysis, and present the results to interested parties in its BGSS proceedings, for each significant capacity commitment over the next few years. Sharing this kind of analysis before the decision is difficult because of legitimate concerns about avoiding compromise of the Company's negotiating position. After each decision has been finalized, however, the Company should expect to present the results of its analysis to the parties.

2. **Perform a structured study of the benefits of substituting peaking services or shorter-term storage services for some of the seasonal storage services currently under contract.** *(Conclusion #3)*

An appropriate analysis would develop information on the costs of alternatives, then test them against each other with optimization software. A simple report on the comparisons should be produced, and shared with interested parties in the Company's next BGSS proceeding. As the Company does not currently have the ability to do such analysis it probably cannot be presented

in the 2008 BGSS proceeding. The Company should defer any capacity commitments until this capability is operative.

3. Separate gas-supply management of NJNG and NJRES. *(Conclusions #4 and 6)*

As long as the utility and the affiliate are operated and managed together, questions will arise about the sharing of opportunities and benefits. Whether the question is utility participation in projects developed or sponsored by the affiliate, or effective participation by the utility in markets where they are supposed to compete, common management of the two operations precludes any demonstration that the two are operating at arm's length. Moreover, if the utility cannot demonstrate that it conducts its operations and makes its commitments on the basis of objective analysis, then it cannot demonstrate conclusively that those operations and commitments are not compromised by the influence of interests other than those of its customers.

IV. Commodity Procurement and Pricing

A. Background

The FERC's Order No. 636 required separation of natural gas, the commodity, from the transportation, storage, and redelivery capabilities that allow the commodity to be used to supply on-demand, utility-type service. The FERC broke the supply function for LDCs into two parts: acquiring the necessary amounts of the commodity, and contracting for (or building) the delivery capacity required to make supply services available.

Send-out needs, planning for the winter season and for the full year, capacity, and peak-day considerations represent important drivers of commodity procurement and pricing. The winter season comprises the five months from November 1 through March 31, when significant quantities of commodity are needed to be available for send-out. Typically the peak day occurs in mid-January. Natural gas generally becomes more expensive to purchase during the winter months. An LDC needs to procure the commodity in a manner that is as cost-effective as possible, yet permits it to have sufficient volumes on hand or available to meet winter demands.

Changes in weather or other use-driving factors make it also important to apply efforts to make effective use of commodity that has become excess. FERC Order No. 636 opened the door for an LDC to make off-system sales of any excess commodity. LDCs often couple this excess commodity with excess pipeline capacity to make off-system sales. The on-system utility customers commonly receive credit (often with a mechanism to share margins with shareowners) against the original costs for excess commodity and pipeline capacity sold off-system.

Liberty evaluated NJNG's gas procurement activities over the past eight years. Specific areas for focus included:

- The effectiveness of NJNG's procurement activities and strategy and philosophy in obtaining the best possible gas prices for its customers
- The best price mix between price and reliability, based on NJNG's spot market, gas commodity and pipeline capacity philosophies
- The independence of the purchasing department in purchasing supplies, and whether it acted in the best interest of ratepayers.

Liberty's examination included:

- The range and mix of commodity purchasing processes and options used
- The portfolio of long-term, medium-term, and short-term or spot supply
- The number of different suppliers and their diversity in geographic location and type
- Effectiveness in qualifying suppliers and third parties for credit and operational worthiness, and criteria used in selecting suppliers
- How well the volumes purchased matched needs
- Flexibility in acquiring short-term needs and disposing of any excesses
- Comparison of plan versus actual
- How effectively the purchases were 'in the market' in a transparent manner
- Effectiveness in acquiring and using market intelligence

- Cost-reduction programs and their effectiveness.

B. Findings

NJNG uses a range of commodity procurement and related processes, but not a request-for-proposal (RFP) process. NJNG did not issue any RFPs for the audit period. The Company believes that its active level of participation in the market is better served by real-time, direct negotiation based on daily market conditions.

NJNG participates actively in cash and futures markets and off-system sales and capacity release programs, and has a range of other cost-reduction incentive programs. NJNG focuses on planning for firm utility customers, but includes all classes of customers in its planning, including off-system sales. The two key individuals for commodity purchasing are one Utility Trader and one Trading Analyst. The Utility Trader deals only in the cash market, with his main focus being to get the lowest price for the commodity and secondarily to optimize capacity through off-system sales and capacity release. The Trading Analyst does the hedging. Planning is done by a Supervisor Energy Planning.

These three individuals work in close collaboration with each other and with the Manager Gas Control. All but the Trading Analyst report directly to the Senior Vice President Energy Services. The Trading Analyst reports to the Director-Financial Book for NJRES, who works with the Senior Vice President when working for the utility, and who reports to a Vice President Energy Trading NJRES for his NJRES accountabilities. The Vice President Energy Trading NJRES reports to the Senior Vice President.

The physical nature of the trading floor facilitates collaborative interactions between the Utility Trader and the Trading Analyst with the NJRES traders. All appear to collaborate with each other and share market intelligence.

1. Portfolio of NJNG Commodity Purchases and Pricing

NJNG Commodity Volume Purchases

NJNG categorizes its commodity purchases as long-term, monthly, or daily. The next table summarizes by fiscal year NJNG's term contracts, defined as those with a term greater than three years, monthly agreements, defined as one month to three years, and daily purchases, defined as less than one month. All volumes are given in millions of decatherms (MMDth).

Portfolio of NJNG Commodity Purchases

Year	Term	%	Monthly	%	Daily	%	Total
2000	22.3	15.4	98.3	68.0	23.9	16.5	144.5
2001	22.0	16.2	91.3	67.2	22.6	16.6	135.9
2002	22.7	15.5	88.1	60.2	35.5	24.3	146.3
2003	19.7	20.8	48.2	50.8	26.9	28.4	94.8
2004	19.4	18.8	56.2	54.6	27.4	26.6	103.0
2005	10.3	9.4	71.5	65.5	27.4	25.1	109.2
2006	6.1	6.5	55.9	59.7	31.6	33.8	93.6

Long-term purchases as a percentage of total purchases decreased irregularly from 15.4 percent in fiscal 2000 through 20.8 percent in fiscal 2003 to 6.5 percent in fiscal 2006. The last of NJNG's long-term contracts, which originated December 1, 1991 will expire October 31, 2007. Monthly purchases as a percentage of total purchases for a given fiscal year held about constant, ranging from a low of about 51 percent to a high of about 68 percent, with the total monthly volumes purchased from fiscal 1999 through fiscal 2006 averaging about 62 percent of the total volumes purchased. Daily purchases increased steadily from 16.5 percent in fiscal 1999 to just less than 34 percent in fiscal 2006.

Winter-season purchases, summarized in the next table (in MMDth), averaged just under 50 percent of total purchases over the period. The preceding table shows that the mix of long-term, monthly and daily purchases for winter-season purchases was similar to the mix for annual purchases. Long-term winter purchases decreased irregularly from about 13 percent for fiscal 2000 (November 1999 – March 2000) to about 18 percent in fiscal 2003 to about 6 percent in fiscal 2006. Winter purchases on a monthly basis ranged from a low of about 48 percent in fiscal 2003 to a high of about 74 percent in fiscal 2000, with the total monthly volumes purchased from fiscal 2000 through fiscal 2006 averaging about 65 percent of the total volumes purchased. The daily winter purchases increased irregularly but rather steadily from about 13 percent in fiscal 2000, peaked at about 34 percent in fiscal 2003, and leveled off to about 29 percent in fiscal 2006.

Portfolio of NJNG Winter Commodity Purchases

Year	Term	%	Monthly	%	Daily	%	Total
2000	8.7	12.6	51.2	74.4	8.9	12.9	68.8
2001	8.5	11.5	53.4	72.3	12.0	16.2	73.9
2002	9.0	12.8	44.6	63.6	16.5	23.5	70.1
2003	8.0	17.8	21.7	48.2	15.3	34.0	45.0
2004	8.1	17.2	27.2	57.7	11.8	25.1	47.1
2005	5.5	11.2	30.8	62.5	13.0	26.4	49.3
2006	2.4	6.0	25.7	64.6	11.7	29.4	39.8

The decline in term purchases reflects expiration of the Company's term-purchase contracts. The Company's last term-purchase contract, the Alberta Northeast contract, will expire soon. The Company's view is that there is no benefit to term purchases; therefore those contracts are not being replaced.

NJNG Commodity Pricing

The next table shows, in $/Dth, the weighted average cost of gas (WACOG) for long-term, monthly, and daily purchases from fiscal 1999 to fiscal 2006.

NJNG Weighted Average Cost of Gas (WACOG)

Year	Term	Monthly	Daily	WACOG
2000	2.74	3.25	3.43	3.20

2001	4.21	5.65	5.58	5.40
2002	2.33	2.95	3.21	2.91
2003	4.02	5.42	5.66	5.20
2004	4.31	5.57	5.84	5.40
2005	4.68	7.15	7.28	6.95
2006	4.18	8.75	7.68	8.09

The average of daily purchased gas has cost more than the average of monthly purchased gas, which, in turn, has cost more than the average of long-term purchased gas. The pattern for the winter-season purchases is the same, as the next table shows. These tables do not reflect the effect of the location of the purchases, which often has a greater price impact than the term of the purchase, or the impacts from hedging activities or purchases made to support off-system sales. Also, the demand/commodity structure of the Canadian term supplies are not accounted for in the commodity-only WACOG comparison which affects this analysis.

NJNG Winter Weighted Average Cost of Gas (WACOG)

2000	2.14	2.75	3.00	2.70
2001	5.45	6.65	7.14	6.59
2002	2.02	2.74	3.08	2.73
2003	4.09	6.00	6.12	5.70
2004	5.11	5.46	6.00	5.36
2005	4.10	7.02	6.69	6.72
2006	3.72	9.50	8.57	8.90

Accompanying the decline in term purchases has been an increase in hedging activity. The Company hedges a significant portion of its monthly purchases. The Company's hedging activities are discussed in a later chapter of this volume.

2. Comparing NJNG Purchases with Demand

A major challenge for an LDC is to match commodity volumes purchased with demand, especially the firm demand from the utility's residential, commercial and industrial customers. The next table compares the utility's total commodity purchases with commodity demand in the form of firm sales, interruptible sales and sales to electric generation and distributed generation, off-system sales, and company-use and unaccounted-for gas.

NJNG Comparison of Purchases with Total Sales, Company Use, UFG

Year	Purchases	Firm Sales	Other*	OSS	Co **	Total Sales	Variance	% Var
2000	144.5	43.6	0.9	96.0	0.4	141.0	3.6	2.5
2001	135.9	51.5	1.5	80.6	0.3	134.0	1.9	1.4
2002	146.3	43.9	2.1	91.6	0.2	137.9	8.4	5.7
2003	94.8	57.1	0.8	30.8	0.7	98.4	-5.3	-5.6
2004	103.0	55.0	0.7	42.8	0.5	99.1	3.8	3.7

2005	109.2	55.0	0.8	46.5	0.7	103.0	6.2	5.7
2006	93.6	49.8	0.7	35.0	0.4	86.0	7.6	8.1

(MMDth)

*Other sales are Interruptible & Electric Generation & Distributed Generation

** Company use & Unaccounted for gas

The variance between total sales and purchases shown in the next-to-last column consists primarily of pipeline fuel retention and net annual storage transactions. The final column shows the percentage that this variance is of total purchases.

A meaningful volume of commodity has been sold off system. The off-system sales volumes represent a significant percentage of total purchases. Off-system sales have decreased from about two-thirds of the total commodity purchases to about one-third, as the Company reduced the amount of delivery capacity under contract, and reduced its emphasis on off-system sales. The next table summarizes off-system sales.

Off-System Sales Relative to Commodity Purchases

Fiscal Year	Purchases (MMDth)	OSS (MMDth)	% OSS
2000	144.5	96.0	66.4
2001	135.9	80.6	59.3
2002	146.3	91.6	62.6
2003	94.8	30.8	32.5
2004	103.0	42.8	41.6
2005	109.2	46.5	42.6
2006	93.6	35.0	37.4

The Company begins each month with the intention to have just the right amount of commodity based on its planning and forecasting documents. The main focus is to get the lowest price for the commodity and secondarily to optimize capacity through off-system sales and capacity releases. The Company releases commodity only when it is clear that the utility does not need it. The Company does not make off-system sales for gas that it does not have. It will, however, opportunistically make commodity purchases for off-system sales when the Utility Trader sees a willing buyer, and sees that he can make a positive margin on the transaction. The more capacity available to the off-system sales function, the more off-system sales that will occur.

3. Number and Diversity of Commodity Suppliers for NJNG

Number and Type of NJNG Suppliers

The next table shows the number and types of NJNG's commodity suppliers. The first column after the fiscal years is the total purchased volume in MMDth. The data for fiscal 1999 is incomplete, but is given to show that even then NJNG had a number of different suppliers. The second column shows the number of different companies supplying commodity to NJNG. The third column provides is the percentage of a given year's total volume supplied by the top ten suppliers. The next three pairs of columns give the volume purchased from trading companies

and that percentage of the total for each year, the volume purchased from pipeline/storage companies and their percentage of the total, and the volume purchased from producing companies and that percentage of the total. The next column is the percentage of the total from the sum of trading, pipeline and producing companies. The last columns show the volumes from other sources labeled other, LDC, power generators, brokers, aggregators/retailers, and LNG.

Number and Type of NJNG Commodity Suppliers

	1999	2000	2001	2002	2003	2004	2005	2006
Purchase Volume (MMDth)	11.1	145	135.9	146.3	94.7	102.9	109.3	93.6
Number of Suppliers	29	69	55	63	75	88	87	92
% Supplied by Top Ten Suppliers	76.5	73.1	75.9	76	69.5	70.8	68.8	52.3
Purchases from Trading Companies (MMDth)	8.1	93.8	99.1	111.1	68.3	73	74.9	58.4
% from Trading Companies	73.3	64.7	72.9	76	72.1	71	68.6	62.4
Purchases from Pipeline/Storage Companies (MMDth)	1.2	17.8	14	14.7	14.4	15.4	13.8	10.1
% from Pipeline/Storage Companies	11	12.3	10.3	10.1	15.2	14.9	12.6	10.7
Purchases from Producing Companies (MMDth)	0.8	20.4	16.5	14.9	6.7	9.8	13.2	17.8
% from Producing Companies	7.4	14	12.2	10.2	7.1	9.5	12.1	19
Combined % from Trading, Pipeline and Producing Companies	91.7	91	95.4	96.3	94.4	95.4	93.3	92.1
Other Sources (MMDth)	0.8	2.3	0	0	0	0.2	0.3	0
LDCs (MMDth)	1.0	1.0	2.1	3.3	1.1	0.7	2.2	0.4
Power Generators MMDth)		4.9	0.8	0.6	1.3	1.4	0.7	0.2
Brokers (MMDth)		1.4	1.9	0.1	0	0	0	0
Aggregators(MMDth)		0.2	1.4	1.5	2.8	1.6	3.3	5.6
LNG (MMDth)					0	0.7	0.8	1.1

From fiscal 2000 through fiscal 2006, NJNG had a low of 55 and a high of 92 suppliers, with the larger numbers occurring in the latter years. Until fiscal 2006, the top ten suppliers accounted for approximately three-quarters of the supply; in fiscal 2006, the top ten accounted for about 60 percent. Trading companies, followed by pipeline/storage companies and producers, comprise

the most significant supplier types. These three groups collectively account for more than 90 percent of the supply in each year. A number of the more prominent trading companies, like BP Energy Company, belong to integrated producers, and could be classified as producers. It is also noteworthy that small suppliers, like aggregators and retailers, and LNG have been added in recent years.

The next table shows the top five suppliers from FY1999 through FY2006. Collectively the volumes for the top five suppliers decrease with time. Also, the same companies are not always in the top five, or always in the same ranking.

NJNG Top Five Suppliers

NJNG Purchase Volume FY 1999*

Company	Purchase Volume	Company Type
Counterparty 1	2.3	Trading
Counterparty 2	1.2	Pipe/Stor
Counterparty 3	1.1	Trading
Counterparty 4	0.8	Trading
Counterparty 5	0.7	Trading

*Data is incomplete

NJNG Purchase Volume FY 2000

Company	Purchase Volume	Company Type
Counterparty 1	25.3	Trading
Counterparty 6	16.7	Trading
Counterparty 2	14.3	Pipe/Stor
Counterparty 7	12.0	Producer
Counterparty 4	9.9	Trading

NJNG Purchase Volume FY 2001

Company	Purchase Volume	Company Type
Counterparty 1	18.3	Trading
Counterparty 6	15.8	Trading
Counterparty 2	13.5	Pipe/Stor
Counterparty 8	12.0	Trading
Counterparty 9	11.5	Trading

NJNG Purchase Volume FY 2002

Company	Purchase Volume	Company Type
Counterparty 1	41.3	Trading
Counterparty 2	14.4	Pipe/Stor
Counterparty 8	14.2	Trading
Counterparty 9	11.6	Trading
Counterparty 7	8.7	Producer

NJNG Purchase Volume FY 2003

Company	Purchase Volume	Company Type
Counterparty 2	14.0	Pipe/Stor
Counterparty 8	13.5	Trading
Counterparty 9	11.6	Trading
Counterparty 10	4.8	Trading
Counterparty 11	4.6	Trading

NJNG Purchase Volume FY 2004

Company	Purchase Volume	Company Type
Counterparty 8	16.1	Trading
Counterparty 2	14.8	Pipe/Stor
Counterparty 9	11.6	Trading
Counterparty 7	5.5	Producer
Counterparty 12	5.1	Trading

NJNG Purchase Volume FY 2005

Company	Purchase Volume	Company Type
Counterparty 13	13.9	Trading
Counterparty 2	13.4	Pipe/Stor
Counterparty 9	11.6	Trading
Counterparty 8	7.7	Trading
Counterparty 14	7.7	Producer

NJNG Purchase Volume FY 2006

Company	Purchase Volume	Company Type
Counterparty 2	9.5	Pipe/Stor
Counterparty 13	6.4	Trading
Counterparty 15	6.2	Trading
Counterparty 7	4.6	Producer
Counterparty 11	4.5	Trading

Liberty found no NJNG analysis that compared how the pricing from the top five to ten suppliers compared with the average pricing or the pricing from the rest of the suppliers. This type of analysis could be used to shape a supply portfolio, taking into consideration the fact that location and date also need to be considered.

Geographic Diversity of NJNG Suppliers

Fiscal 1999 purchases came from nine states, with Louisiana, New York, and Pennsylvania being the largest. Other states included Alabama, Arkansas, New Jersey, Ohio, Texas, and West Virginia. Several market-area locations also supplied significant volumes: Tetco Market Zone 3 (M3), TRA Zone 6 non-New York (Z6NNY), and the terminus of the TXG system near Lebanon, Ohio.

In fiscal 2000, the number of states increased from nine to 15, with the larger volumes coming from Louisiana, Texas, Pennsylvania, New York, Indiana, and Ohio, plus Tetco M3. In fiscal

2001, the number of states was 12 and the number of different pipelines was eight. Again the larger volumes came from Louisiana, Texas, New Jersey, Tetco M3 and Tennessee. In fiscal 2002, the number of states was 13, with the larger volumes coming from Louisiana, New York, Texas, Tennessee, and Arkansas, plus Tetco M3. A prominent supplier from the New York sourcing was Counterparty 2, and one from Tennessee was Counterparty 3. In fiscal 2003, the number of states was 14, the same states as previously, plus Tetco M3 had the largest volumes. In fiscal 2004, the number of states was 12. Larger volumes came from Louisiana, Mississippi, New York, Texas and Tetco M3. In fiscal 2005, the number of states was 16. Larger volumes came from the same locations. In fiscal 2006, the number of states was 15 with the larger being Louisiana (three suppliers), Texas (four suppliers), New York (three suppliers), Ohio (four suppliers), and Tetco M3 (three suppliers).

4. Qualifying Suppliers for NJNG

NJNG qualifies suppliers or counterparties from two perspectives: their creditworthiness and their operational record. The Senior Vice President Energy Services qualifies counterparties from an operating and diversity perspective, having weeded out those that did not perform satisfactorily, and selectively adding potential new suppliers. New suppliers may bring supply from a different area, such as Appalachia or Canada. Counterparties must be able to deliver commodity where NJNG can receive it, and be cost-competitive.

The Risk Management Committee Guidelines (RMC Guidelines) contain the policy and guidelines for credit and contracts. NJR's Credit and Contract Policies and Procedures appended to the RMC Guidelines specify further details. The Manager Credit & Contracts has responsibility for authorizing new credits, setting credit limits, monitoring and reporting credit exposure, reviewing creditworthiness of counterparties, monitoring the concentrations of credit risk and reviewing and monitoring risk-reduction arrangements. RMC policy states that the Manager Credit & Contracts *"will have clear independence and authority separate from the trading function."* Liberty found that this manager and his five-member staff are fulfilling these accountabilities and have clear independence and authority, even from superiors in Energy Services.

The Manager Credit & Contracts and his staff have responsibility for the NAESB (North American Energy Standards Board) and some older GISB (Gas Industry Standards Board) contracts for the physical trades, and ISDA (International Swaps and Derivatives Association) contracts for the financial trades. Some older customized contracts are still in use, but the Manager is trying to replace them with standard NAESB contracts. NJR has a standard guarantee agreement that it seeks, but counterparties almost always modify it. The Senior Vice President Energy Services signs off on all agreements, and the Controller on most. These two officers must authorize credit to $5 million; the Senior Vice President and Chief Financial Officer of the parent company has $15 million of credit authority. Anything greater than $15 million must go to the Chairman and CEO. The Legal Department specifically approves standard contracts and each contract that varies from an approved standard one.

The Manager Credit & Contracts establishes credit limits for the corporation as a whole for each counterparty, and allocates credit between NJRES and the utility. He is involved with credit for

everything for NJRES and NJNG. Separate gas purchase and sales contracts, and separate ISDA agreements, are used for NJNG and NJRES.

The Credit Analyst does the day-to-day credit monitoring of all counterparties for both NJNG and NJRES. The Contracts Manager establishes contracts with counterparties, coordinates the legal review and completes the paperwork, including amendments to existing contracts. The three more junior staff people collectively assure contract information is accurately in the system and filed, handle the invoicing for NJRES accounts receivable and accounts payable, and do the monthly closing for NJRES. Two of these three junior staff may from time to time assist the utility with invoicing if the utility's Gas Accounting Analyst is unavailable. The Manager Credit & Contracts and his staff all fill out time sheets to allocate their time to the company they are serving.

The Company has a standard procedure for authorizing or increasing credit for a counterparty. If the counterparty has a credit rating, the Manager Credit & Contracts can grant credit based on that rating. The lowest rating level he will accept is the last investment grade level above non-investment grade. If the counterparty is not rated, the Manager Credit & Contracts looks at the parent company's rating, and if rated acceptably, will secure a parental guarantee. If no rating is available, he looks at the counterparty's (or, if applicable, its parent's) financial statements to set a credit limit. Failing all of that, he will grant credit if the counterparty posts a letter of credit or cash. Guidelines indicate that authorization up to a $10 million line of credit to the last level above non investment grade is possible.

All traders have access to a daily credit report that lists credit limits for each counterparty and the dollar value remaining. Anything of special note is reported by the Manager Credit & Contracts at the daily morning meeting.

The creditworthiness of counterparties is monitored by reviewing ratings and financial reports. Existing counterparties are reviewed quarterly, and the information is in a quarterly credit review report. Concentrations of credit, in trading groups like Duke or BP for example, are monitored to be certain that collective credit limits are not being exceeded. The Manager Credit & Contracts authorizes risk-reduction arrangements (where a counterparty gives a guarantee) conservatively. Should the counterparty's situation change and NJNG's exposure to that party is considerably less than the guarantee, he will permit that party to reduce the guarantee, retaining a generous cushion in NJNG's favor. He does not unilaterally reduce a counterparty's risk-reduction arrangement; rather, he waits for the party to request it.

The Manager Credit & Contracts rescinds or reduces credit for a counterparty whose credit is downgraded or whose financials change for the worse. He subscribes to services that send daily alert emails on changes in credit or credit conditions.

Liberty found the same counterparty risk profile for the utility as for NJRES . The risk pool is combined. NJRES has a larger share of NJR's total credit level because it does more business than the utility does. The Manager Credit & Contracts assesses the total collective credit risk of counterparties for NJNG as needed. Geographic diversity or the type of counterparty (trader, producer, pipeline/storage, or broker, for example) does not play a role.

The Intercontinental Exchange (ICE), an electronic trading platform, is used to manage credit exposure for ICE-traded transactions. The Manager Credit & Contracts and his Credit Analyst are the only two people who can activate counterparties on ICE, which gives traders the ability to enter into transactions with particular counterparties on the ICE system. The traders cannot see the identity of the credit-approved counterparties on ICE, just their credit limits, until a deal is struck. The traders' terminals will not permit deals to go through for counterparties that are not credit approved. The Manager Credit & Contracts and his Credit Analyst do "live" monitoring of ICE weekly on a random basis, and may also monitor a specific counterparty if identified on daily reports as one to watch closely. In addition to "live" monitoring, the Credit Analyst issues a daily report to traders, which they are expected to review.

5. Obtaining Market Intelligence

NJNG's Utility Trader deals only in the cash market. Most of his contracts are monthly, but he may secure a few five-month winter strips before winter starts. He is also authorized to buy summer strips. Outside of these strips and the monthly contracts, he generally buys daily for the rest.

The trader typically focuses on the month at hand. The objective of the monthly plan is to go into the month having purchased the correct volume of gas. Then as the month unfolds, he buys or sells or pulls from storage as appropriate in light of comparative costs. Most purchases use fixed-prices. Most of his monthly deals use standard NAESB contracts with prices fixed against a NYMEX last-day settle. Standard contracts are for 10,000 Dth/day for a time period, often a month or a day. Sometimes the contracts are GISB. If the trader uses an index for a monthly contract, he uses indexes from *Inside FERC Gas Market Report*. Daily purchases are almost always fixed-price. If an index is used for a one-day purchase, it is the *Gas Daily* index for the location where the gas is purchased.

After addressing the on-system load, the Utility Trader optimizes capacity. The Utility Trader buys commodity near-term to fill capacity that has become available to complete an off-system sale.

The trader estimates that 80 percent of his trades use ICE, with the rest being done over the phone (on a recorded line). The ICE platform is extremely robust, deep and liquid for the U.S. market. The ICE platform terminal is configured to allow the Utility Trader to execute trades with credit-approved counterparties, see bid/offer information on others, but not to do deals with those others. Furthermore, neither he nor the NJRES traders know the identity of the any of the counterparties, approved or not approved, until they close a deal with an approved counterparty. This is an ICE established parameter within their trading system. As discussed above, the Manager Credit & Contracts and his Credit Analyst are the only personnel that can activate trading counterparties on ICE, and they monitor trading activity in NJNG and NJRES with respect to the Credit and Contracts policies.

Data available for January 2005 through September 2006 compare the deal price made by the Utility Trader with the Gas Daily Absolute Min-Max price index. A sampling of this data showed that about one-quarter of his deals were in the low end of the index range, about one-

quarter were in the middle of the index range, about one-quarter were in the high end of the index, and about one-quarter were out of the index range. The majority of price differentials outside of Gas Daily Absolute Min-Max price resulted because the index did not match the physical location of the deal, which required an added transportation expense between the index and the actual location of the deal. The Utility Trader was 'in the market' and was not buying better or worse than the market average. Liberty was informed that no modifications were planned for this report, and no analyses were done on the data in this report.

Liberty observed that abundant market intelligence is available to the Utility Trader from the other traders on the trading floor, from querying ICE, or over the phone. Frequently when the Utility Trader was either querying ICE or getting offer information on the phone, he would call out to the NJRES traders to learn what they were seeing in the market, especially at his locations of interest. The trader gets helpful information from the NJRES traders on what hubs are trading at what price so that he can purchase at the lowest price. He also has access to the standard industry reports like *Gas Daily*. He looks at *Platts Gas Daily*, which gives average pricing for various hubs, and compares it to what he has done, but does not record or log the comparison, which means he does not do any post-trade analysis for the purpose of potentially improving his trading acumen for the future.

6. Comparison of NJNG's Plan versus Actual

Liberty examined the planned-for commodity volumes *versus* the actual in an attempt to gain insight into the Company's approach to commodity purchasing. This discussion focuses on comparing the plan for residential and general utility sales with the actual commodity needed[56] since these are the sales that are the focus of commodity purchasing.

The data examined was from fiscal 1998 through fiscal 2006 for both the full year and the winter seasons. The data contained the planned commodity volume (in decatherms), the planned degree-days, and the planned number of residential and general customers, as well as the actual data for both the full years and winter seasons. The most significant driver for the difference between plan and actual for both the full year and winter season was the variation in weather, tempered by the number of customers. The next table illustrates this result. A negative percentage means that the actual was less than the plan. Specifically, a negative for volume means less volume was actually needed than was planned. A negative for customers means fewer customers materialized than planned. A negative for degree-days means the weather was not as cold (or as warm) as planned and less fuel was required by customers.

Comparison of Plan vs. Actual

Fiscal Year	% Difference Actual - Plan for Volume	% Difference Actual - Plan for Customers	% Difference Actual - Plan for Degree Days
1998	-10.1	-0.4	-11.5
1999	-7.7	-1.8	-8.2
2000	-1.8	7.3	-6.1
2001	7.2	5.8	5.3
2002	-20.6	2.8	-17.4
2003	7.6	-1.7	13.1

2004	0.1	-1.2	1.4
2005	-2.9	1.2	3.5
2006	-15.5	0.3	-8.3
Winter Season	**% Difference Actual - Plan for Volume**	**% Difference Actual - Plan for Customers**	**% Difference Actual - Plan for Degree Days**
97/98	-14.2	-0.4	-11.7
98/99	-8.1	-2.9	-7.8
99/00	-5.4	3	-9
00/01	6.2	0.5	7.8
01/02	-22.8	-2	-18.6
02/03	6.9	-2.8	11.7
03/04	1.4	-1.2	4.1
04/05	-1.7	1.4	3.3
05/06	-11.1	2.3	-5.7

If OSS sales are indeed for the primary purpose of selling excess commodity, then off-system sales should increase as a percentage of commodity purchased when the actual weather is warmer than the plan anticipated. Conversely, when the actual weather is colder than the plan anticipated, off-system sales should decrease as a percentage of commodity purchased. The two most notable weather swings were the warmer-than-expected weather for fiscal 2002 and the colder-than-expected weather for fiscal 2003. Off-system sales show a noticeable increase in fiscal 2002, corresponding to the warmer-than-anticipated weather, and a significant decrease in fiscal 2003, corresponding to colder-than-anticipated weather.

C. Conclusions

1. The Company no longer considers term gas purchases. *(Recommendation #1)*

The Company has largely abandoned the term-purchase commodity market. The Company's focus is the monthly markets, with a few seasonal purchases. Daily purchases and sales take advantage of changes in basis differentials among purchase locations, and differences between forecast and actual weather.

Price protection, once available through term purchases, is now provided by hedging. To a significant extent, each month's requirements are initially acquired as futures contracts, and then converted to "physicals" during bid week each month. Liberty understands this process and agrees that it is a common practice.

Liberty's concern is with the Company's near-total reliance on this approach. Today there is renewed interest in term contracts in support of infrastructure development. Moreover, individual suppliers may have their own reasons to discount supplies in return for a commitment to take. That these possibilities are not considered is a weakness of the Company's approach.

2. NJNG's commodity purchases have been "in the market".

The majority of NJNG's physical commodity purchases have been made on the Intercontinental Exchange (ICE). The ICE platform is extremely robust, deep and liquid for the U.S. market. When trading on ICE, one is 'in the market'. Recently kept records comparing the deal price made by the Utility Trader with the *Gas Daily* Absolute Min-Max price index show that the Utility Trader was 'in the market' and was not buying better or worse than the market average.

The ICE platform terminals are configured to allow NJNG's Utility Trader and the utility's Trading Analyst to execute trades with credit-approved counterparties and to see bid/offer information on others, but not do deals with them. Furthermore, neither knows the identity of the any of the counterparties, approved or not approved, until they close a deal with an approved counterparty. This is an ICE mandated practice. The Manager Credit & Contracts and his Credit Analyst can activate all trading counterparties on ICE in accordance with the Credit and Contracts policies.

3. NJNG had a large number of diverse suppliers over the audit period.

NJNG used a large number of suppliers who are diverse both in type and in region. From fiscal 2000 through fiscal 2006, NJNG had a low of 55 and a high of 92 suppliers, with the larger numbers occurring in the latter years. For fiscal 1999 the data was incomplete, but showed at least 29 different suppliers even then. Until fiscal 2006, the top ten suppliers accounted for approximately three-quarters of the supply; in fiscal 2006, the top ten accounted for about 60 percent. Of the different types of suppliers, the most significant are trading companies, followed by pipeline/storage companies, and producers. Collectively, these three groups account for more than 90 percent of the supply in each year. Other supply types included LDCs, power generators, brokers, aggregators/retailers, and LNG.

The geographic diversity of suppliers includes the location where the purchase was made. In fiscal 1999, purchases were sourced from nine states, with Louisiana, New York, and Pennsylvania being the largest. Other states included Alabama, Arkansas, New Jersey, Ohio, Texas, and West Virginia. Also included for a significant volume was Tetco M3, along with TRA/Z6NNY and TXG. Over the audit period, the geographic diversity increased until, in fiscal 2006, the number of different states was 15 with the larger being Louisiana (three suppliers), Texas (four suppliers), New York (three suppliers), Ohio (four suppliers), plus Tetco M3 (three suppliers).

4. NJNG appropriately qualifies and monitors its suppliers.

The policy and guidelines for credit and contracts is contained in the Risk Management Committee Guidelines (RMC Guidelines) along with further details in NJR's Credit and Contract Policies and Procedures that is appended to the RMC Guidelines. The Manager Credit & Contracts is responsible for authorizing new credits, setting credit limits, monitoring and reporting credit exposure, reviewing creditworthiness of counterparties, monitoring the concentrations of credit risk and reviewing and monitoring risk-reduction arrangements. Furthermore, the RMC policy states that the Manager Credit & Contracts "*will have clear independence and authority separate from the trading function.*" Liberty confirmed that this manager and his five-member staff are fulfilling these accountabilities and have clear independence and authority, even from superiors in Energy Services.

The Senior Vice President Energy Services qualified counterparties from an operating and diversity perspective, eliminating those that did not perform satisfactorily, and selectively adding new suppliers that could provide a benefit to the utility, such as supplying from a different geography. Besides being cost-competitive, the counterparties must also be able to deliver commodity where NJNG can receive it.

5. **NJNG does not perform substantial enough levels of performance analysis.** *(Recommendation #2)*

The commodity market is rich with data, and NJNG's commodity procurement activities generate abundant data, yet analyses of the data in order to potentially identify more attractive alternatives or improvements to the procurement process are not done. For example, analyses were not done that compared how the pricing from the top five to ten suppliers compared with the average pricing or the pricing from the rest of the suppliers, which could prove helpful in shaping a supply portfolio. Another example is the fact that a report summarizing the trading results needed to be especially constructed for this audit. A third example is using the data in the Month End Price Comparison Report for categorizing counterparties into index thirds or quartiles to discern any deal patterns that might exist with counterparties for potential use in refining future purchasing tactics.

D. Recommendations

1. **Examine additional commodity-purchase alternatives.** *(Conclusion #1)*

NJNG's near-total reliance on the monthly and daily gas markets is understandable in the current market, but should be re-examined going forward. LDCs in other parts of the country have begun to experiment with the inclusion of some longer-term arrangements. Other LDCs in New Jersey make considerable use of seasonal purchases.

Liberty does not know whether diversification of purchase arrangements will improve the terms for supply to NJNG's customers. The concern is that NJNG does not appear to be examining alternatives.

2. **Use market data and NJNG's own procurement data to analyze alternatives and seek purchasing improvements.** *(Conclusion #5)*

NJNG needs to step back from daily activities and take a fresh look at key areas. Three potential analyses, as an example, include comparing the pricing from the top five to ten suppliers with the average pricing or the pricing from the rest of the suppliers; using the data in the Month End Price Comparison Report for categorizing counterparties into index thirds or quartiles to discern any deal patterns that might exist with counterparties for potential use in refining future purchasing tactics; and assessing relationships between the cost and volume portions in the commodity portfolio. Analyses like these may suggest some metrics for the utility for measuring and communicating its performance to the NJ BPU.

V. Affiliate Procurement Relationships

A. Background

This portion of Liberty's audit report addresses affiliate relationships in gas procurement. Other chapters of the report address potential cross-subsidization of non-utility affiliates through holding company financial structure, and through cost allocation methods.

NJNG and its affiliate NJRES both transact in the natural-gas commodity, transportation, and storage-capacity markets. The natures of their businesses differ, however. NJNG "takes a position" in the market; *i.e.*, the LDC buys commodity and capacity sufficient to meet a forecasted load in order to make gas available on demand to customers for utility service. NJNG must generally make long-term capacity commitments to provide sufficient capacity to satisfy customer requirements both in the present and as they grow. NJNG also participates in secondary markets for gas and capacity in an effort to recover some of the costs of maintaining supplies for its on-system customers.

The peaks to which NJNG must plan and execute its procurement activities naturally produce a substantial amount of capacity at other times, and potentially even at peak times, when conditions differ from those forecasted. Generally, NJNG off-system sales of gas commodity come on days when its customers do not need as much as was forecast. NJNG enters short-term transactions, either in the form of off-system sales or capacity releases, to make use of contracted capacity at other than peak times.

NJRES follows a different strategy. It does not take a position; NJRES "trades the spreads." This term refers to the practice of acquiring capacity or commodity only when it has an identified a companion opportunity to sell it to a customer. In other words, it does not manage procurement to supply end-use customers, including as a provider of last resort. Spreads can be geographic (a difference in the value of gas between two locations), or spreads in time (a difference in the value of the gas between two points in time). NJRES characterizes its portfolio of physical assets as follows:

> *The NJRES portfolio is very dynamic, with changes occurring each season and fiscal year. The transportation portfolio is structured to leverage basis differentials between locations and not necessarily to serve any market obligation; therefore it can be more fluid as pricing differentials change throughout the pipeline grid due to supply and demand influences.*
>
> *The storage portion is also dynamic and is structured to leverage time differentials, along with some locational differentials. Likewise these assets are not required to serve a market obligation and therefore can be fluid.*

NJRES also manages various combinations of gas supply, transportation, and storage assets for others. It has managed gas transportation and storage assets for electricity generators and a storage facility. It has managed the assets of other LDCs, and is now managing assets for a distribution company in the Washington, D. C. area.

Despite differences in NJNG and NJRES purposes and strategies, the day-to-day activities to meet them have substantial similarity. Both companies buy and sell gas every day, for example, very often in the same places. Both companies inject gas into storage, when they consider prices to be relatively low, in order to have it available to withdraw when prices are generally expected to be higher. NJNG's addition of its Storage Incentive Program means also that both companies now trade physical gas and financial instruments. This trading is done through the use of separate physical portfolios and futures clearing merchants. The purpose of the NJNG Storage Incentive Program is to inject gas into storage at a cost lower than an established benchmark while NJRES injects gas and puts hedges in place against the eventual sale, an entirely different focus from that of the NJNG program.

Potential conflicts arise because of the simultaneous conduct of essentially similar activities in the same markets. In essence, they compete with each other for transactions with the third parties who operate in common markets. The potential for conflicts increases under regulatory regimes that pass all or most economies through to customers, while non-utility affiliate margins go to shareowners. Liberty therefore focused on the transparency and completeness of documentation of dealings directly and indirectly linking NJRES and NJNG, and the processes by which each makes transaction decisions, in order to assure that NJNG undertakes transactions that have the purpose and effect of maximizing benefits to utility customers. Liberty did not undertake its baseline analysis because of any particular concern about NJR or NJRES. Liberty routinely performs such analysis in similar audits because of the potential for conflicts to exist at any LDC, in whatever region located, that has affiliates operating in the same markets.

The common management and operation of many transaction-related activities between NJRES and NJNG increases the opportunity for them to link their transaction decisions in ways that can disadvantage the utility. An NJNG commodity trader and a financial trading analyst have primary responsibility for utility gas purchases and sales and commodity price hedging activities, respectively. NJRES personnel trained and routinely back up these two individuals. The same people also conducted during the audit period the transportation and exchange function for the two companies. Both companies also report to the same Senior Vice President.

Liberty conducted this inquiry through data requests and interviews, plus direct observations of wholesale marketing activities in progress. Liberty also sought and obtained access to records of both companies' gas purchase and sales transactions. Liberty undertook these activities in order to determine whether:

- Personnel in the gas procurement area conduct negotiations at arm's length and in compliance with affiliate-relationship and fair-competition standards
- NJNG makes gas purchases in a manner that promotes the best interests of utility customers
- There has been any substantial potential for or evidence of financial or other harm to utility customers from transactions with affiliates
- There exist adequate procedures, policies, and systems to ensure that NJNG meets objectives at the lowest possible cost to ratepayers

- There exist adequate internal controls to protect against improper transactions.

B. Findings

1. Policies, Procedures and Practices

NJRES and NJNG function in an integrated manner in a number of important transactional respects:

- Commodity traders and financial traders for the utility and the affiliate share the same trading floor. They use the same information systems and trading platforms, and enter their transactions into the same transaction-tracking systems. However, the data for each is maintained in different databases for separate and independent portfolios, and specific security access is required for access to each data base.
- Certain individuals are primarily responsible for the utility and others primarily for the affiliate. Affiliate personnel routinely substitute for utility personnel when necessary or expedient, however.
- The same individuals performed the transportation and exchange (T&E) function for both companies during the audit period. Those individuals keep time sheets in order to allocate their time between the utility and the affiliate, but perform operation of the respective capacity portfolios together.
- The same Credit and Contracts group serves both companies. Credit limits for individual counterparties apply to the sum of the two companies' exposure.

Strict separation of the accounts for the two entities forms the guiding policy in the area of capacity and commodity transactions of the utility and its affiliate. The same transaction-tracking systems (GMS for physical transactions and Zai*Net for financial transactions) are used for both companies, but the data for each is maintained within separate databases. The utility conducts most of its transactions on the Intercontinental Exchange (ICE). Once a transaction occurs on ICE, GMS automatically loads the trade information into its records. Similarly, for trading financial instruments, the two entities use different futures clearing merchants (FCMs); therefore, even if the same person trades for both companies, that person must place each trade with the correct FCM. There is no possibility of switching transactions between the two affiliates after the trades are entered into GMS.

The commonly managed operations have also taken place under a policy directive prohibiting the two companies from trading with each other. This policy addresses a number of concerns; *e.g.*, that the trading affiliate could buy from the utility and then re-sell at a higher price, or that the affiliate could buy at a lower price and sell to the utility at an inflated one.

Liberty observed that all of the NJNG and NJRES personnel interviewed understood the policy prohibiting transactions between the two companies. The common group, managed by a senior officer, however, did not reduce this policy to writing, institute any procedures for implementing it, or conduct substantial tests for compliance with it. IAD checks GMS reports for transactions

between NJNG and NJRES in its twice-yearly audits of gas-supply costs. IAD reported to Liberty that these procedures have never disclosed any transactions of this type.[7]

2. Assets and Transaction Types

NJNG's capacity portfolio has shifted away from long-line transportation over the audit period, shifting toward storage and short-haul transportation. The next table shows that the total annual delivery capacity owned by and under contract to NJNG has increased from 115 MMDth to 131 MMDth, as the Company's load has grown. The proportion of that capacity from storage has increased from 15 percent to over 17 percent.

Composition of Firm Capacity Portfolios (Capacity Data in MMDth)

	1999	2000	2001	2002	2003	2004	2005	2006
NJNG								
Pipeline Capacity	96.6	96.6	91.7	102.7	97.0	108.3	107.7	107.7
Storage Capacity	17.2	17.2	16.5	16.5	19.3	19.3	22.8	22.8
LNG Peaking Capacity	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
Total Capacity	114.7	114.7	109.1	120.1	117.2	128.5	131.4	131.4
Pipeline Capacity % of Total	84.2%	84.2%	84.1%	85.5%	82.8%	84.3%	82.0%	82.0%
Storage Capacity % of Total	15.0%	15.0%	15.1%	13.7%	16.5%	15.0%	17.4%	17.4%
NJRES								
Pipeline Capacity		140.7	140.2	285.3	473.3	404.1	383.1	537.4
Storage Capacity		0.0	3.7	4.2	10.6	12.0	20.0	45.7
Total Capacity		140.7	143.9	289.5	483.9	416.1	403.1	583.1
Pipeline Capacity as % of Total		100.0%	97.4%	98.5%	97.8%	97.1%	95.0%	92.2%
Storage Capacity as % of Total		0.0%	2.6%	1.5%	2.2%	2.9%	5.0%	7.8%

NJRES storage capacity includes some 10-day storages that might be considered peaking capacity.

The same table shows the composition of the firm capacity under contract to NJRES over the period. The data in the table suggests that, while that company's firm capacity portfolio continues to be overwhelmingly transportation, the proportion that is storage has also increased.
The duration of NJNG's utility commodity purchase commitments has become shorter over the audit period, which is in keeping with common industry experience. NJNG, like others also, has increased its use of hedging to fix in advance the price of the gas as it has decreased its use of longer-term purchase commitments. This shift has made the value of the financial instruments used to hedge those prices a significant component of the value of the Company's inventories of natural gas. The increase in the price of natural gas over the period has also had a large effect on

[7] NJNG did, however, report in testimony that it had entered into an exchange agreement with NJRES starting in November 2002. See the testimony of Joseph A. Shields in BGSS Annual Filing under Docket No. GR03050340.

inventory values. The next table shows how these factors have affected the values of NJNG and NJRES asset positions over the audit period.

Year-End Inventory Values ($MM)

	1999	2000	2001	2002	2003	2004	2005	2006
NJNG								
Value of Gas in Storage	35.7	55.4	70.0	53.5	90.9	94.0	128.1	155.8
Value of Derivatives	0.0	0.0	-21.0	-2.6	-28.9	-11.7	35.1	-82.5
NJRES								
Value of Gas in Storage	0.0	8.4	0.0	32.9	97.8	180.9	126.8	357.1
Value of Derivatives	0.0	0.0	15.4	-14.7	5.8	-19.0	-155.0	116.5
NJR Consolidated								
Value of Gas in Storage - net	35.7	63.8	70.0	86.4	188.7	274.9	254.9	512.9
Value of Derivatives - net	0.0	0.0	-5.5	-13.1	-7.4	-2.5	-55.5	69.4
Total Value - Net	35.7	63.8	64.5	73.3	181.3	272.4	199.4	582.3

The table demonstrates how the value of NJNG's and NJRES's financial derivatives tend to move in opposite directions. This tendency exemplifies the differences in their respective businesses. NJNG's derivatives (discussed in greater detail in the hedging chapter of this report volume) tend to comprise futures contracts or swaps that the LDC acquires for the purpose of protecting against an increase in commodity price, before it buys that physical commodity. NJRES, on the other hand, seeks margins produced by the difference between the price at which it buys gas and the price at which it sells it. It therefore orients much of its hedging activity toward preventing a decline in prices to be realized from sales. The utility's hedges protecting a low price tend to offset the affiliate's hedges that protect a high price, with consequent benefits to the parent company's consolidated exposure to commodity price movements.

Overall, NJRES conducts the same general kinds of transactions as NJNG does; *i.e.*; buying and selling at wholesale, plus storage optimization. The affiliate does not have on-system customers that it must serve, however. Therefore, it does not need long-term commitments to particular supply assets. Rather, its asset acquisition is more opportunistic; it acquires particular assets, often for relatively short periods, in response to observations or expectations by company personnel regarding opportunities for positive margins. Assets acquired include gas transportation and storage assets, gas commodity, and financial instruments used in hedging the price of commodity.

The quantities traded in NJNG's off-system sales and capacity releases have declined significantly over the audit period. NJNG's off-system sales and capacity releases totaled 35.7 MMDth in FY2006, down from 143.6 in FY1999. The Company attributes this decline to two kinds of reductions in the amount of capacity available:

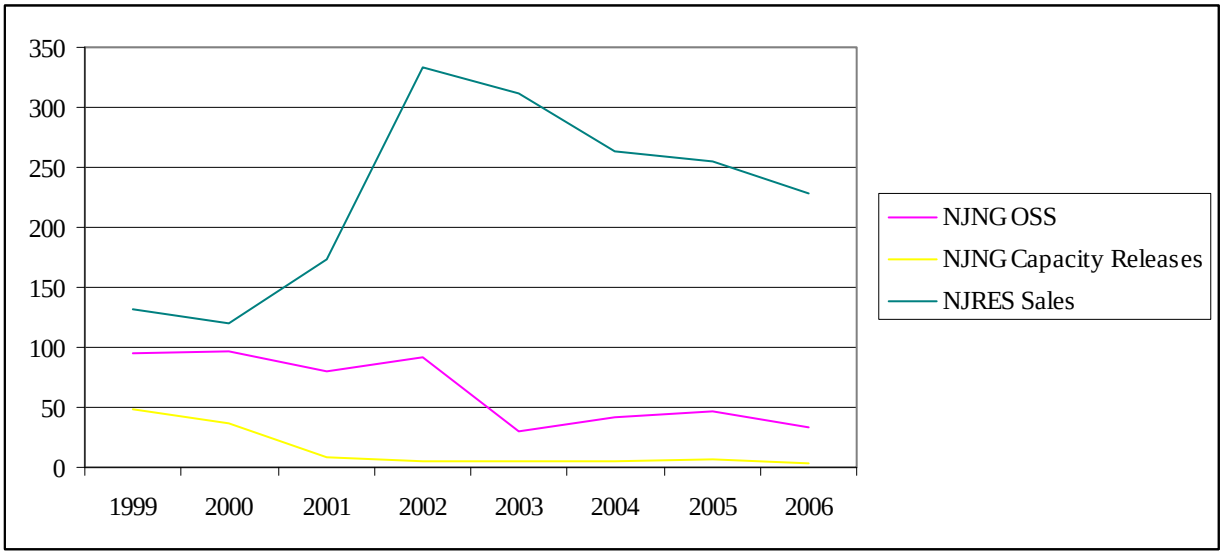
- A decline in the amount of capacity under contract, due to the Capacity Reduction and Portfolio Enhancement incentive program

- Increases in the amount of capacity required to serve the Company's on-system customers as its load has grown.

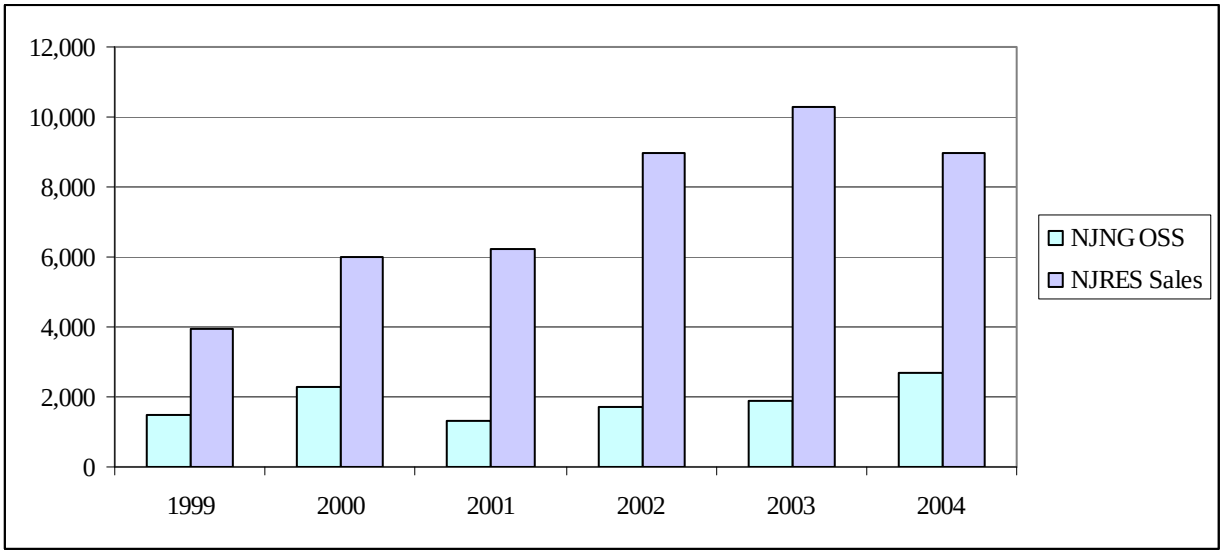
(NJNG reported in its last BGSS filing that, at the rate that it is currently adding customers, its requirement for peak-day capacity grows by about 17,000 Dth per year.)

The next two figures show the changes for both companies and the number of sales transactions for both companies over the audit period.

NJNG OSS and Capacity Release vs. NJRES Sales



NJNG and NJRES Number of Sales Transactions



Liberty requested access to the two companies' sales records, in order to permit a comparison of their transactions. The next two tables show the results of that comparison. The first shows the following patterns in NJNG sales:

- Over the entire period, most (70 to 80 percent) of its off-system sales took place in Tetco's Market Zone 3 (Tetco M3), which is the area between western Pennsylvania and New York City. NJNG's gate stations are located in this zone.
- The second-largest sales location was Iroquois Zone 2, which is north of New York City. NJNG is not physically connected to the Iroquois pipeline, so delivery to NJNG's service territory of the volumes available under its Alberta Northeast gas-purchase contract requires an exchange. NJNG has often found the best value for NJNG's customers is realized by selling the gas on the Iroquois system and replacing it with gas bought on a system that connects to NJNG's city gates, such as Tetco or Transco.
- Dominion South Point has been a frequent sales point throughout the period. This location is a highly-liquid trading point where gas from Dominion storages is delivered to the Tetco (and other) pipeline system.
- The Company's Texas Gas capacity was permanently released in November 1999 and April, 2000 as part of the Capacity Reduction and Portfolio Enhancement incentive program. The Company has a remaining long-term gas-purchase contract that delivers to that system in the Gulf Coast Producing Region, however. With no way to move the gas, the Company sells it into the Texas Gas SL Pool.
- Tetco ELA is Tetco's eastern-most access zone. Thus, it is typically the source for the highest-priced gas entering Tetco's main line. Accordingly, it is the gas most likely to be sold when the Company finds that it has more gas available on the Tetco system than its customers require.

	2000	2001	2002	2003	2004	2005	2006
Market Area							
Tetco M3	52.1	53.1	63.5	21.4	33.9	33.6	21.2
Iroquois Zone 1	0.3	0.1	6.2	0.0	0.0	0.2	0.0
Iroquois Zone 2	1.8	5.8	9.0	3.1	3.4	5.4	7.9
Transco Zone 6 Non-NY	2.7	1.1	1.5	1.6	0.1	0.3	0.3
Transco Zone 6 NY				0.5	0.1	1.0	0.0
Tennessee Zone 5	1.7	1.8	2.3	0.4	0.0	0.1	0.1
Sub-total	58.6	61.9	82.5	27.0	37.5	40.6	29.5
Storage Area							
Tetco M2	0.5	1.0	0.6	0.2	0.7	0.4	0.1
Dominion South Point	6.6	7.8	1.1	0.5	0.4	0.8	2.0
CNG Gate D				0.1	0.5	0.2	0.4
Sub-total	7.1	8.8	1.7	0.8	1.6	1.4	2.5
Production Area							
Tetco ELA	6.0	2.1	3.9	0.1	1.5	0.7	0.9
Tetco WLA	4.8	1.6	2.1	0.0	0.0	0.1	0.0
Tetco STX	4.3	0.6	0.8	0.4	0.2	0.0	0.2
Texas Gas Zone SL	3.0	3.4	2.4				
Texas Gas Zone 0				2.4	2.4	2.4	2.4
Texas Gas Zone 1	9.5	1.4		0.0	0.0	0.2	0.0
Sub-total	27.6	9.1	9.2	2.9	4.1	3.4	3.5
Other	6.7	2.1	0.3	0.9	0.4	2.0	0.2
Total Sales	100.0	81.9	93.7	31.6	43.6	47.3	35.7

	2000	2001	2002	2003	2004	2005	2006
Group 1: Same as NJNG							
Market Area							
Tetco M3	33.8	40.4	21.5	30.4	42.3	43.1	43.4
Iroquois Zone 1			0.1	1.5	0.3	7.3	0.0
Iroquois Zone 2	0.3	1.5	0.7	0.1	3.5	3.1	1.0
Transco Zone 6 Non-NY	17.5	15.3	5.4	3.4	5.7	2.1	1.1
Transco Zone 6 NY				2.4	4.6	1.2	9.9
Tennessee Zone 5	0.2	2.5	11.6	0.9	0.4	1.0	2.2
Sub-total	51.8	59.7	39.3	38.7	56.8	57.8	57.6
Storage Area							
Tetco M2	0.4	6.8	0.4	0.6	1.7	0.7	1.0
Dominion South Point	18.1	28.5	141.8	86.3	55.0	32.5	29.3
CNG Gate D				5.6	0.2	0.5	1.1
Sub-total	18.5	35.3	142.2	92.5	56.9	33.7	31.4
Production Area							
Tetco ELA	5.3	18.0	10.9	5.7	13.9	9.1	2.6
Tetco WLA	7.5	12.9	4.3	2.2	0.7	2.1	1.7
Tetco STX	0.2	2.1	0.0	0.3	3.2	0.2	0.0
Texas Gas Zone SL		2.6	4.3				
Texas Gas Zone 0				3.4	6.2	5.7	1.6
Texas Gas Zone 1		0.2			0.2	0.5	0.3

Group 2: Not Used by NJNG	2000	2001	2001	2003	2004	2005	2006
Market Area							
Transco Zone 5	0.2	3.2	0.4		2.5	1.5	4.5
Storage Area							
ANR ML3				1.0	1.7	5.3	5.8
Columbia Gate D				1.6	0.0		13.7
Columbia Pool	0.2	14.3	12.5	33.7	20.2	18.0	14.6
Columbia Zone 4	10.1	0.3	0.1				
Columbia Gulf/Leach				3.1	9.2	7.7	0.9
Tennessee Zone 4	2.0	5.0	33.7	52.2	21.9	17.4	10.4
MichCon					4.6	7.2	10.8
TCPL/Niagara			0.0	10.6	5.4	5.9	0.7
TCPL/Waddington				0.1	2.9	5.9	4.4
Sub-total	12.3	19.6	46.3	102.3	65.9	67.4	61.3
Production Area							
ANR SW				5.9	0.4	0.1	
Columbia Gulf Onshore		1.1	5.9	6.0	3.2	3.4	1.8
Sonat T1		0.2		0.2	4.1	10.0	9.4
Tennessee Z2	0.1	3.1	28.0	4.2	0.2	2.2	3.4
Tennessee Z1 800				5.7	1.9	6.1	1.8
Tennessee Z1 500				17.3	10.8	5.0	4.8
Tennessee Z1	0.1	5.4	41.5	3.5	0.4	4.2	7.0
Sub-total	0.2	9.8	75.4	42.8	21.0	31.0	28.2
Other	13.6	9.4	9.2	23.7	36.0	45.8	37.6
Total Sales	109.6	172.8	332.3	311.6	263.3	254.8	226.8

The second of the two tables show the locations of NJRES's sales. Comparing that table to NJNG's produced the following observations:

- The locations of much of NJRES's sales activity have changed over the audit period; however, NJRES has continually sold large amounts of gas at some of the same locations as NJNG. Tetco M3 and Dominion
- South Point, for example, are major sales locations for both companies in every year.
- A third major location for NJRES's sales is the Columbia (TCO) Appalachian Pool. That location is geographically and functionally similar to Dominion South Point. Columbia Appalachian Pool is a region, rather than a specific location, but it serves as the place where storage facilities on the TCO system re-deliver to TCO itself, and to other pipeline systems.
- Other locations, such as Tennessee Zone 4, were major transaction points for a few years within the audit period (2002-2005 in the case of Tennessee Zone 4), but not in others. This pattern reflects the relatively short-term nature of NJRES's business. (Tennessee Zone 4 crosses Ohio and northern Pennsylvania, and is connected to storages in those states. The Stagecoach storage facility re-delivers into Tennessee Zone 4.)

- NJRES has further expanded its markets as can be seen in "Group 2: Not Used by NJNG" in the previous table.

The two companies also buy gas at some of the same locations. The next two tables show the quantities purchased by each company at particular locations over the audit period. NJNG's purchase data suggest the following observations:

- Of the various purchase locations, NJNG has bought perhaps the most gas at Tetco's STX Access Area. This area has the lowest prices on the Tetco system; thus, volumes from there tend to be taken first.
- Tetco M1-24 is also a frequent source. NJNG's Tetco M1-24 capacity has receipt points at interconnects with CenterPoint Energy Gas Transmission and Ozark Gas Transmission. Both of those systems are connected to Mid-continent gas. Tetco's ETX Access Area has been a frequent source since 2004. This source was made attractive by the changes that NJNG has made in its contracts with Tetco as part of its portfolio restructuring.
- ANR's ML3 and ML7 have been frequent purchase locations recently. Those locations are 1) where the ANR system connects to other pipelines at Lebanon, OH, and 2) the location for re-delivery from storages on the ANR and Michigan Consolidated (MichCon) systems. ANR Zone 7 is also connected to a number of pipeline systems accessing gas from Canada and the Mid-continent Producing Region: Great Lakes, Viking and Alliance access Canadian supplies, and Northern Natural, and ANR itself, access the Mid-continent.
- NJRES has further expanded its supplies as can be seen in "Group 2: Not Used by NJNG" in the subsequent table.

NJNG Purchase Locations

	2000	2001	2002	2003	2004	2005	2006
Market Area							
Tetco M3	7.6	11.0	12.9	4.2	2.6	2.7	1.1
Iroquois Zone 1	15.2	14.8	16.0	14.0	14.8	4.9	0.5
Iroquois Zone 2	0.6	0.9	6.6	0.2	0.2	0.7	0.3
Transco Zone 6 Non-NY	3.3	3.3	2.0	2.5	2.4	1.6	0.4
Tennessee Zone 5	4.1	4.3	5.7	0.0	0.0		
Sub-total	30.8	34.3	43.2	20.9	20.0	9.9	2.3
Storage Area							
Iroquois Waddington						8.9	13.9
Tetco M2-24	27.5	26.8	22.3	6.1	2.0	3.5	0.1
Dominion South Point	20.3	13.7	17.4	4.0	8.1	1.9	6.8
Dominion Loudon						10.3	3.3
Texas Gas Lebanon				0.6		10.6	5.1
Texas Gas Zone 4				11.6	11.6	1.0	
ANR ML3				2.0			5.9
ANR ML7						2.9	2.5
Sub-total	47.8	40.5	39.7	24.3	21.7	39.1	37.6
Production Area							
TENNIA				2.8	3.1	3.7	2.4
Tennessee Z0				0.9	7.8	1.6	
Tennessee Z1 100					3.2	2.3	0.4
Tennessee Z1 500				0.2	5.2	2.0	0.3
Tetco M1-24	9.6	16.7	20.9	18.7	15.3	13.0	14.0
Tetco ELA	10.3	8.0	8.3	0.7	3.4	1.0	1.7
Tetco WLA	8.5	10.3	8.3	0.7	0.0	0.6	0.1
Tetco ETX	10.1	2.8	4.3	0.2	2.2	8.5	7.8
Tetco STX	12.4	14.4	16.3	16.9	14.2	16.9	18.7
Texas Gas Zone SL	3.0	3.4	2.4				
Texas Gas Zone 0				2.4	2.4	2.5	2.4
Texas Gas Zone 1	9.5	1.4				0.2	
Sub-total	63.4	57.0	60.5	43.5	56.8	52.3	47.8
Other	3.1	4.1	2.9	6.0	4.4	8.0	5.9
Total Purchases	145.1	135.9	146.3	94.7	102.9	109.3	93.6

NJRES Purchase Locations

	2000	2001	2002	2003	2004	2005	2006
Group 1: Same as NJNG							
Market Area							
Tetco M3	22.0	29.9	8.4	8.2	11.7	6.2	13.1

Iroquois Zone 1	0.1		0.0	0.0		2.9	0.4
Iroquois Zone 2	0.1	1.5	0.0	0.1	0.4	0.1	0.0
Transco Zone 6 Non-NY	13.5	10.8	5.5	2.0	4.2	2.1	1.0
Tennessee Zone 5	0.0	1.0	4.4	0.0		0.0	0.0
Sub-total	35.7	43.2	18.3	10.3	16.3	11.3	14.5
Storage Area							
Iroquois Waddington					0.5	2.6	0.1
Tetco M2-24	0.8	4.9	0.3	0.2		0.0	0.0
Dominion South Point	10.6	20.9	54.9	27.7	26.9	18.8	16.6
Dominion Loudon							
Texas Gas Lebanon						0.2	1.6
Texas Gas Zone 4						0.0	
ANR ML3					0.0	2.9	3.5
ANR ML7				0.5	1.8	1.4	2.0
Sub-total	11.4	25.8	55.2	28.4	29.2	25.9	23.8
Production Area							
TENNIA				0.9	0.2	1.7	0.0
Tennessee Z0	3.0	4.1	70.6	54.6	33.8	27.9	20.1
Tennessee Z1 100				2.6	5.5	11.0	4.3
Tennessee Z1 500				59.8	21.9	12.4	9.2
Tetco M1-24	4.2	0.0	0.1	0.0	0.1	3.5	9.1
Tetco ELA	13.5	28.0	26.4	21.8	38.3	23.5	10.4
Tetco WLA	11.8	14.9	4.4	1.5	2.3	4.3	4.3
Tetco ETX	0.0				0.2	2.2	2.7
Tetco STX	0.2	0.7	0.1	5.4	19.7	5.9	1.7
Texas Gas Zone SL		0.8	1.4				
Texas Gas Zone 0				1.2	2.2	2.1	0.3
Texas Gas Zone 1		1.2		0.3	0.1	0.5	1.4
Sub-total	32.7	49.7	103.0	148.1	124.3	95.0	63.5
Group 2: Not Used by NJNG							
Storage Area							
ANR APC				1.9	3.4	2.7	9.7
Columbia Pool	0.3	12.7	12.1	13.7	6.9	3.4	4.9
Columbia Zone 4	9.4	0.3	0.1				
MichCon					1.2	8.2	8.5
MidCon Pipeline Zone 4	7.6	2.6					
Tennessee Zone 4	7.0	6.0	5.0	14.3	4.4	1.7	5.8
TCPL/Niagara			0.1	8.3	3.8	3.8	5.4
Union/Dawn			2.8	5.7	15.7	14.5	18.9
Sub-total	24.3	21.6	20.1	43.9	35.4	34.3	53.2

Production Area							
ANR SE TRANS			0.1	4.6	6.3	8.3	6.8
Columbia Gulf Main Line		1.1	0.8	9.9	12.8	12.2	14.6
Columbia Gulf Onshore				11.1	10.2	13.5	7.2
Tennessee Zone 1	3.4	25.3	156.2	5.2	0.2	0.0	1.0
Tennessee Z1 800				27.4	8.8	7.5	3.5
Tetco M1-30	4.2	0.0	0.1	1.6	8.3	9.0	7.5
Sub-total	7.6	26.4	157.2	59.8	46.6	50.5	40.6
Other	0.0	15.0	6.9	22.2	30.1	38.3	50.6
Total Purchases	110.9	181.7	360.7	312.7	281.9	255.3	246.2

With the exception of Dominion South Point and Tetco's ELA Access Area, NJRES's purchase locations have varied over the audit period. The various legs of the Tennessee system have been important Gulf Coast Producing Area purchase locations through the period. The Columbia Gulf system and Canada have become important sources as the company's volumes have grown.

3. Matching Transactions Analysis

Large portions of NJNG and NJRES sales and purchases took place at the same locations during the audit period. Liberty compared the terms of those sales and purchases. Liberty obtained access to the records of the transactions of both affiliates. They have used the same transaction-tracking system, but each had a separate data base for entry of its respective transactions. Access to the two data bases has been password-protected; therefore, only authorized personnel can view or change the transaction information for each company.

Performing a matching-transaction analysis requires care to assure comparability. A number of factors can affect the value of gas at a particular location. In an effort to control for the variables that can distort results, Liberty's definition of "matching" transactions required:

- A common date for agreeing to the transaction (sale or purchase)
- Common flow dates (beginning and end)
- Common delivery or receipt points.

The next two tables show the results of a preliminary Liberty analysis under the preceding criteria. The goal of this analysis was to compare the performance of one affiliate against the other in similar transactions. The number of matches reports how many times an affiliate transaction matched a utility transaction. Note that matching transactions can include different numbers of deals for each affiliate. For example, if four affiliate transactions matched one utility transaction, the number of matches is reported as four. The two tables show (for matching transactions) in what proportions the utility received or paid a higher price than the affiliate, a lower price than the affiliate, or the same price as the affiliate.

Matching Sales Analysis

Fiscal Year	NJNG Higher Price		NJ RES Higher Price		Equal Price		Total Matches
	Number	Percentage	Number	Percentage	Number	Percentage	
2006	1,515	43.91%	1,658	48.93%	247	7.16%	3,450
2005	1,422	52.41%	1,095	40.36%	196	7.22%	2,713
2004	1,410	42.05%	1,636	48.79%	307	9.16%	3,353
2003	620	37.46%	918	55.47%	117	7.07%	1,655
2002	627	40.85%	791	51.53%	117	7.62%	1,535
2001	706	44.71%	728	46.11%	145	9.18%	1,579
2000	955	56.95%	639	38.10%	83	4.95%	1,677
1999	306	43.04%	260	36.57%	145	20.39%	711

Sales transactions analysis results vary over the period. The utility received a higher price more often in the early years of the period, but the affiliate received a higher price more often in the later years, except for fiscal 2005. The purchase analysis summarized in the next table indicates that NJRES paid a higher price than the utility in at least half of the years in the audit period.

Matching Purchases Analysis

Fiscal Year	NJNG Higher Price		NJ RES Higher Price		Equal Price		Total Matches
	Number	Percentage	Number	Percentage	Number	Percentage	
2006	770	41.60%	865	46.73%	216	11.67%	1,851
2005	941	48.31%	873	44.82%	134	6.88%	1,948
2004	2,182	47.05%	2,122	45.75%	334	7.20%	4,638
2003	1,479	46.19%	1,495	46.69%	228	7.12%	3,202
2002	719	41.51%	871	50.29%	142	8.20%	1,732
2001	988	43.33%	1,085	47.59%	207	9.08%	2,280
2000	837	45.44%	836	45.39%	169	9.17%	1,842
1999	498	41.36%	517	42.94%	189	15.70%	1,204

Liberty's transaction testing identified some trades that suggested a sale of gas from one of the affiliates to the other, which company policy has forbidden. In particular, it appeared that NJRES and NJNG had inserted a third party between the two affiliates, which would have the effect of concealing that they were in effect transacting with each other. Liberty found transactions in which NJNG appeared to sell gas to a third party, who then sold to NJRES the exact same volume at the same location, but for one-half to one cent per Dth more. Liberty also found transactions where NJRES sold gas to a third party, who then sold the exact same volume to NJNG at the same location for one-half to one cent per Dth more. In these transactions, a single trader from the commingled gas supply organization would place both of the linked transactions; *i.e.*, the same person at NJNG/NJRES would be listed in the transaction record for both the sale from one affiliate to the third party, and the sale from the third party to the other affiliate.

These conditions led Liberty to run again its matching-transactions analysis, in order to secure a year-by-year count of them. Liberty's refined the criteria from its prior baseline analysis (same trade date/same flow dates/same location) to add:

- Same counterparty
- Same volume
- Same trader.

The transaction-data capture system did not include the trade date until July 2000. Liberty decided therefore not to include this criterion in its second analysis, because doing otherwise would have precluded any ability to make observations about this early portion of the audit period. The next table presents the results of the second analysis. The data in the table show that, while not a common occurrence, linked transactions occurred throughout the audit period. The table identifies individual counterparties by number to protect confidential Company information.

Same Trader Linked-Transactions Summary

Fiscal Year	**Occurrences (#)** *Different Price*	*Same Price*	**Volume** (Dth)	**Counterparties**
2006	0	1	20,800	Counterparty 10
2005	28	1	504,050	Counterparties: 10 and 12
2004	3	2	71,000	Counterparties: 10, 12, and 16
2003	2	0	15,000	Counterparties: 13 and 17
2002	35	0	424,501	Counterparties: 1, 13, 18, 19 and 20
2001	35	0	316,290	Counterparties: 18, 21, 22, and 23
2000	84	0	672,380	Counterparties: 1, 18, 22, 23, and 24
1999	17	0	129,587	Counterparties: 1, 23, and 25

Liberty then removed the same-trader criterion, recognizing the common location, routine interaction, and cross-entity responsibilities of the commingled NJR/NJRES gas supply function. The analysis performed without that criterion identified a significantly larger number of matching transactions.

Liberty conducted interviews with Company personnel to inquire about these transactions. These interviews included: (a) separate interviews with the two traders primarily involved in the transactions, (b) NJRES's Vice President of Energy Trading (the traders' supervisor), and (c) the Senior Vice President, Energy Services. The Senior Vice President is the officer in charge of both NJNG's gas-supply operations and the activities of NJRES. The interviews confirmed the following facts:

- The Company policy against having the affiliates trade with each other had been in place for the entire period covered by the audit
- All the personnel involved at both companies knew about the policy
- These linked transactions were used to get around the policy.

Liberty sought further explanation about these transactions. Leadership of the commingled gas-supply organization first stated that it did not consider the linked transactions to be affiliate transactions because value was added by the intermediaries.[8] The follow-up information provided also noted that at least one additional transaction that matched Liberty's screening criteria had occurred in FY2007, but that no inappropriate shifting of value away from NJNG's gas-supply portfolio had occurred under any linked transactions. That leadership[9] confirmed in a separate submission Liberty's count of the number of linked transactions for 2002, but advised that the correct number for 2001 was 31, rather than the 35 disclosed by Liberty's analysis. This discrepancy appears to have resulted from "double-counting" of transactions in data provided by the Company. That second submission also described some extenuating circumstances that could have contributed to the occurrence of the linked transactions in FY2002 and 2001. These circumstances included the collapse of Enron and lack of liquidity in the market.

The Company's responses to Liberty's inquiries regarding the linked transactions raised other concerns:

- What other relationships (and their magnitudes) may have existed between NJNG, NJRES, and the counterparties used to link transactions
- Whether additional linked transactions may have occurred at locations that, while having different names (e.g., because they are on different pipeline systems), were nevertheless geographically the same
- The likelihood that NJNG's capacity commitments were being influenced by creating business opportunities for NJRES
- Whether Liberty's same-flow-date criterion might cause the analysis to miss any possible transactions that were arranged together but executed through different flow dates.

Liberty's work scope did not envision the detailed examination it would take to address issues of this type. Liberty did, however, conduct work that addressed them at a more general level. The following subsections address this list of concerns in more detail.

Relationships with Linked-Transaction Counterparties

The Company reported that it "could occur" that a "counterparty was contacted by NJNG and asked to be in the middle of two related transactions in order to avoid a direct transaction with NJRES." A transaction resulting from such a request would comprise a knowing violation of the rule against transactions between NJNG and NJRES. The two affiliates have a number of counterparties whose business with them is very substantial. The next table collects the counterparties who had substantial relationships with both the utility and the affiliate during the audit period (*i.e.*, the 10 largest transaction counterparties in a year). The list of significant counter-parties only goes back to 2003. Market turmoil before that caused Enron and many major market participants to disappear.

[8] Letter, dated March 12, 2007, from Joseph P. Shields to John Antonuk, at p. 2.
[9] Letter, dated March 15, 2007, from Joseph P. Shields to John Antonuk.

Significant Counterparties

Counter-party	Years of Substantial Relationship	Value of NJNG Purchases (million)	Rank Among NJNG Counter-parties	Value of NJRES Sales (million)	Rank Among NJRES Counter-parties
Counterparty 10	2005	$ 23.13	3	$ 42.04	9
	2004	$ 20.61	4	$ 44.28	6
	2003	$ 36.90	1	$ 48.69	5
Counterparty 13	2006	$ 19.63	5	$ 42.98	4
	2005	$ 58.15	1	$ 55.92	7
	2004	$ 10.46	10	$ 29.23	9
Counterparty 26	2004	$ 25.10	3	$ 61.94	1
	2003	$ 7.34	8	$ 67.16	2
Counterparty 12	2004	$ 12.36	8	$ 53.07	4
Counterparty 19	2003	$ 6.36	9	$ 31.55	11*

($ are in millions)
Note: Counterparty 19 was NJRES' 10th biggest counterparty in terms of volume.

The Company reported that, in addition to avoiding the prohibition against transactions between NJNG and NJRES, placing an intermediary between the two affiliates "… allowed NJNG to further relationships with various parties that had capabilities outside of these specific transactions to assist when interstate operational issues arose." The preceding table shows that the counterparties likely to be asked to participate in linked transactions also had substantial relationships with NJRES.

Different Names for Same Location

NJNG reported that its capacity portfolio allows gas to be received in Tetco's Market Zone 2 (Tetco M2), and that those receipt points can receive gas from delivery points on the Columbia Gas Transmission system, the Tennessee Gas Pipeline system, Midwestern Gas Transmission, and ANR Pipeline Company. This capability complicates the question of determining a "common transaction point" for purposes of identifying potential linked transactions. The possibility is for NJRES to arrange with an intermediary to buy gas at a point on one of the four pipeline systems mentioned, and then re-sell it at an agreed mark-up to NJNG at a point on Tetco M2. The NJRES transportation and exchange function operates both NJRES's capacity on the four named systems and NJNG's capacity on the Tetco system, so these linked-delivery-point transactions could be accomplished under a standing arrangement with an intermediary, without its active participation in individual transactions.

A baseline Liberty review identified some transactions with delivery by NJRES to a counterparty at one location, and receipt by NJNG from the same counterparty of the same quantity at a near-by location on a different pipeline.

Influence of NJRES on NJNG's Capacity Commitments

NJNG reported to Liberty that Tetco M2 "… is not a liquidly traded point and there is no published index." NJNG also noted that:

> *There are few sellers at this point[;] however NJRES did and currently has significant capability to supply this point, through its portfolios on Columbia, Tennessee, Midwestern and ANR.*

It is not clear why NJNG would have made significant commitments to new transportation services from Tetco M2 to NJNG's city gates as part of Texas Eastern's TIME I and TIME II projects if Tetco M2 were not an attractive location for buying gas. NJRES, on the other hand, has more evident interests in this location. It has stated that, "With NJRES having such a large portfolio in this region, it was a natural market condition for NJRES to be a counterparty to these transactions."

NJNG's commitment to the TIME II Project is currently pending. Liberty also notes that NJNG does not presently have the capability to analyze quantitatively the trade-offs between supplying NJNG's city gates via upstream capacity and supplying them via the facilities that are part of TIME II. As discussed elsewhere in this report, Liberty has recommended that the Company acquire or develop that capability so that it can conduct the proper analysis of that commitment.

Different Flow Dates

Liberty has generally used common flow dates as a criterion for determining matching transactions. NJRES has indicated that it was familiar with Liberty's testing methods, having examined Liberty's audit reporting that addressed gas supply (and explained transaction testing methods) at Eliabethtown Gas. One could execute a linked transaction under a longer-term utility purchase (*e.g.*, monthly, seasonal or annual, for example) from a counterparty. That counterparty could then agree at the same time to buy from the utility's affiliate enough gas to fill that purchase commitment, but on a series of shorter-term purchases (*e.g.*, daily or weekly). Liberty's common-flow-date criterion would not capture such linked transactions.

4. Assessment of Potential Customer Consequence

Liberty Analysis

Liberty sought to compare the prices realized in apparently linked transactions to prices realized by NJNG and NJRES in other transactions at those locations on those days. Liberty asked the Company to list: (a) every occurrence where NJNG sold gas to a third party, who in turn sold the same amount of gas to NJRES with identical trade and flow dates, and (b) every occurrence where NJRES sold gas to a third party, who in turn sold the same amount of gas to NJNG with identical trade and flow dates. Identification of these transactions would provide an initial field of review for linked transactions. Liberty did not require a matching location because of the observed potential for linked transactions with differing recorded delivery locations.

For each instance of an NJNG sale through one of the linked transactions, Liberty also asked for a weighted-average price for all other NJRES purchases, all NJRES sales, and all NJNG sales with identical transaction dates, flow dates, and locations. For each instance of an NJRES sale in one of the linked transactions, Liberty also asked for a weighted-average price for all other

NJNG purchases, all NJNG sales, and all NJRES sales with identical transaction dates, flow dates, and locations.

With the data that the Company provided for each NJNG sale in a linked transaction, Liberty subtracted from the NJNG sales price (where available) each of the weighted-average prices discussed above, and then multiplied this price differential times the volumes in the transaction. This computation compares the revenues that NJNG received in the linked transaction to the revenues that NJNG would have received if it had received the weighted average price obtained in all other comparable transactions on that day.

The next table summarizes the results of this calculation. Negative numbers indicate where NJNG would have received more revenue by being credited with a weighted-average price, while positive numbers indicate where NJNG would have received less revenue by being credited with a weighted-average price.

Comparable Prices for NJNG Sales in Linked Transactions

Fiscal Year	NG WASP	NG WAPP	RES WASP	RES WAPP
2006	($106.03)	$112.00	$0.00	$2.62
2005	($1,114.74)	$538.25	$1,356.11	$22,064.42
2004	n/a	n/a	($1,500.00)	$787.85
2003	Company Reports No Sleeves			
2002	$3,171.22	($1,376.36)	($26,811.09)	$8,750.52
2001	$4,703.79	($2,274.07)	($1,372.05)	$22,231.86
2000	No Data Provided			
1999				
Total	$6,654.24	($3,000.18)	($28,327.03)	$53,837.28

Liberty performed a similar calculation on all NJNG purchases through linked transactions. Again Liberty took the NJNG purchase price in each of the linked transactions, and (where available) replaced it with the weighted-average prices. The next table summarizes the results of this calculation. Positive numbers indicate where NJNG would have incurred less cost under the weighted-average price, while negative numbers indicate where NJNG would have incurred more cost under the weighted-average price.

Comparable Prices for NJRES Sales in Linked Transactions

Fiscal Year	NG WASP	NG WAPP	RES WASP	RES WAPP
2006	($20,571.17)	n/a	$1,263.52	$2,263.59
2005	$0.00	$11,133.39	($1,600.00)	$7,350.00
2004	n/a	n/a	n/a	n/a
2003	Company Reports No Sleeves			
2002	($19,522.77)	n/a	$167.73	n/a
2001	$10,189.20	$1,765.30	$6,932.66	($774.77)
2000	No Data Provided			
1999				
Total	($29,904.73)	$12,898.70	$6,763.90	$8,838.82

The "n/a" designation means that, for that subset of prices for that year, there were no comparable transactions. Often, the weighted-average price that Liberty compared to a linked transaction price was from only one other transaction. There were many times where a linked transaction was identified but there were no other transactions with which to compare it.

The Company did not provide data for 1999 and 2000. The Company provided only one month of data for each of the years 2001 and 2002, noting that the months provided had "the most transactions". It is apparent from the table summarizing linked transactions by year that the most linked-transaction activity occurred from 1999 to 2002. The high volume of such transactions during this period limits the reliance one can place upon the single, company-selected month.

The Company has stated that, when a suspect transaction was concluded on the Intercontinental Exchange (ICE), it could not be a linked transaction, because the exchange matches buy and sell offers electronically. It appears that the Company did not rule out ICE transactions in its identification for Liberty of possible linked transactions, but NJNG did not provide the requested weighted-average price comparisons for these transactions. Liberty does not believe it is correct that pre-arranged transaction linkages are impossible or even particularly difficult to execute on ICE. It also appears that the Company used "matching location" as a criterion when identifying linked transactions. Liberty's data request specifically did not include this criterion as an exclusionary factor, because review of the data suggested the possibility of linked transactions that did not occur at the same transaction point.

Company Analysis

After reviewing Liberty's Draft Report, NJRES prepared for Liberty a similar matching transaction analysis, but removing the same-trader constraint. The Company excluded FY1999 and 2000 from the analysis for the reason that it considered the data unreliable. The data for this period can no longer be accessed directly. The Company ran a special query to provide Liberty many months ago with data from this period. An NJRES VP's concern presently is the inability to access the data more directly means that he cannot verify its accuracy, and therefore has concerns about the reliability of the results of the special query. Two factors he cited specifically were the numbers and volumes of the 1999 and 2000 transactions identified through the special query. Liberty's review of them did not identify any apparent anomalies.

The Company's analysis did, however, include all 12 months of FY2001 and 2002, rather than the two sample months for that period to which Liberty's analysis was limited. Removing the same-trader constraint and including the additional months of FY2001 and 2002 increased the number of potentially-linked transactions substantially. The table below compares Liberty's count of matching transactions with those disclosed through the NJRES analysis.

Comparison of NJRES Linked-Transaction[10] Count with Liberty's

Liberty Analysis		NJRES Analysis				
Fiscal Year	Count[11]	On Trading Platforms[12]	Direct Trades	Linked Transactions	% of Total Trades	% of Total Volume
1999	17					
2000	84					
2001	35	69	186[13]	255	5.58	17.03
2002	35	32	269	301	6.30	3.23
2003	2	28	0	28	0.00	0.00
2004	5	50	7	57	0.17	0.12
2005	29	17	28	45	0.66	0.33
2006	1	36	4	40	0.07	0.04

The Company's analysis shows that potentially-linked transactions were common in FY2001 and 2002, as evidenced by the relatively high proportion of total utility transactions represented by potentially-linked transactions. Potentially-linked transactions accounted for 17 percent of the volume traded by the utility in FY2001. The number of potentially-linked transactions declined precipitously after FY2002, which witnessed the market dislocations following Enron's collapse.[14] The number remained small in 2003, but then increased slightly in FY2004 and 2005.[15]

NJRES reported that it also did an analysis that removed the matching-location constraint. Eliminating that constraint increased the number of potentially-linked transactions in the six years analyzed from 726 to 3,332. This analysis merely identified additionally potentially-linked transactions, it did not include a WACOG computation or any other price analysis. Elimination of this location constraint clearly reduces the likelihood that identified transactions were linked. Transactions showing as potentially linked on this basis would include ones that took place in locations where the gas had very different values (production-area transactions matched with market-area ones, for example). Without further analysis, however, it is not possible to determine which location differences justify a conclusion that linkage did not occur.

[10] Same counter-party, same location, same volume, same flow dates
[11] Liberty count also restricted to same trader
[12] AllTrade (2001 and 2002), Enron Online (2001 and 2002), ICE (2002-2006). Also includes two brokered transactions (2004)
[13] Includes four multi-month transactions
[14] Enron filed for bankruptcy in early December, 2001.
[15] The executive responsible for managing NJNG and NJRES gas-supply activities stated that his group studied Liberty's findings about linked transactions in Liberty's audit of affiliate transactions of NUI Corporation for the New Jersey Board of Public Utilities. That audit produced an Interim Report dated December 17, 2003, and a Final Report dated March 1, 2004.

NJRES repeated Liberty's potential customer-consequence calculation, but with two material expansions: (a) the larger universe of transactions that resulted from removal of the same-trader constraint, and (b) data for all 24 months of the 2001 and 2002 period. The following table compares the results of the two analyses. Note that the numbers in the table do not add. Instead, they represent alternative ways of measuring how much better or worse NJNG would have done if it had sold at the indicated price, rather than at the price that it received in the potentially-linked transactions.

When NJNG is the Seller		
	Liberty	**NJRES**
Compared to NJRES weighted-average sale price in comparable transactions	$(28,327)	$(170,282)
Compared to NJRES weighted-average purchase price in comparable transactions	53,837	87,951
Compared to NJNG weighted-average sale price in 3rd party comparable transactions	6,654	(66,648)
When NJNG is the Buyer		
Compared to NJRES weighted-average sale price in comparable transactions	6,764	339,604
Compared to NJRES weighted-average purchase price in comparable transactions	(29,905)	(130,491)
Compared to NJNG weighted-average purchase price in 3rd party comparable transactions	12,899	72,602

The first line for each of the two cases shown above (NJNG as seller and NJNG as buyer) represent the best means for "looking through" the intermediary to the real parties in interest. In other words, when NJNG is the seller in a linked transaction, it is essentially selling to NJRES to support an NJRES sale. Therefore, the best measure of consequence is based on the assumption that NJNG could have made the sale directly, and therefore should have received prices comparable to what NJRES was receiving for its sales. By this measure, the Liberty preliminary analysis shows that NJNG lost $28,327 by failing to make the sale directly, while the expanded NJRES analysis increases this loss to $170,282.

In the case of purchases by NJNG, the way to "look through" the intermediary is to recognize that NJNG is essentially making the purchase from NJRES, in which case, NJNG should be expected to pay what NJRES was charging others in comparable transactions. By this measure, the Liberty preliminary analysis shows that NJRES charged NJNG $6,674 more than was charging others, while the expanded NJRES analysis increases this overpayment loss to $339,604. Adding the numbers produces total adverse consequences of about $35,000 under Liberty's analysis and about $510,000 under NJRES's expanded analysis.

NJRES also provided a comparison based on prices received or paid by NJNG relative to published price indexes at the locations where the transactions occurred, on the day that they occurred. Liberty did not find this analysis informative. It effectively considers fair value to have been received when priced are at or near index average prices for the day. That approach ignores the fact that traders can take advantage of intra-day changes in index prices (which can be substantial) to create an invalid appearance of "value." For example, if the price late in the trading day has fallen by $0.50 per thousand cubic feet, a trader could make a sale to NJNG for the average price even though the utility could have bought for as much as $0.50 less if it were in the market at that time. The standard proposed by NJRES would thus allow an essentially unconstrained ability to transact with the utility at other-than-prevailing prices. Liberty has found that intra-day price movement makes it impractical to use as a pricing benchmark anything other than comparable transactions made the same day.

The following paragraphs provide a chronological discussion of the Liberty data requests and other communications underlying the analyses of linked transactions. In an effort to determine the potential for value shifting from NJNG, Liberty submitted a series of data requests asking the Company to identify several data points for use in performing an analysis of this potential. Liberty DR 764 asked the Company to:

> "*Please provide a list of all transactions where NJNG sold gas to a third party and NJRES bought that same amount of gas from the same third party (with identical trade and flow dates). Please also provide a list of all transactions where NJRES sold gas to a third party and NJNG bought that same amount of gas from the same third party (with identical trade and flow dates*)."

The answer to this request would disclose any potentially-linked transactions with the following identical criteria: transaction date, flow dates, counterparty, and volume. This request did not ask NJNG to use matching location as a criterion for identification of a potentially-linked transaction. Liberty also asked (Data Request 768 and 769) for various WACOG calculations of the other NJNG and NJRES transactions that had the same transaction date, flow date, and location of those transactions identified in the response to data request 764.

The response to these questions exhibited the following gaps:

- The Company did not provide any data for Fiscal 1999 and 2000, which comprise 25 percent of the audit period.
- NJNG provided one month of data each for fiscal 2001 and 2002, saying these months had the "most transactions". The number of linked transactions declined significantly in 2003 and 2004; therefore, limiting the analysis to only two sample months of the preceding period raised a concern.
- The Company identified potentially linked transactions where ICE was used for one or both of the transactions, but did not provide the requested information weighted-average price comparisons for these transactions.
- The Company used "matching location" as a criterion when identifying all potential linked transactions. The DR did not ask for this limitation and it was not a useful one, given that had observed some potentially-linked transactions that did not occur at the identical point.

A Company memo dated August 24, 2007 subsequently updated a few aspects of the Company's earlier responses, and recreated Liberty's WACOG analysis. This updated response no longer excluded potentially-linked transactions that occurred on ICE, and also included all transactions from fiscal 2001 and 2002.

However the August 24, 2007 memo still lacked two sets of important data. First, no analysis was performed on transactions from fiscal 1999 and 2000. The memo states that information was requested that "NJNG did not store in the Gas Management System (GMS) until fiscal year 2001." The memo goes on to say that the NJNG can "no longer run the software that was used in 1999 which makes it impossible to provide reliable data for 1999 and 2000 in response to DR764-769." However, the Company did provide Liberty with a list of every NJNG and NJRES

transaction (response to DRs 444 and 445) for 1999 and 2000. This response generally contains the detail needed to perform the requested analysis. Liberty did observe one shortcoming in the Company's data from Fiscal 1999 and 2000. Transaction date was not recorded until July of 2001. However, at least provisionally, an analysis could proceed under the assumption that spot transactions were done on a "day-ahead basis." This would mean for example, that a transaction for gas that flowed one June 5th, would have a transaction date of June 4th. This assumption relies on the fact that spot transactions are arranged the day before the flow start date.

Second, the memo also included a corrected response to DR 764. It identified all potentially-linked transactions using transaction date, flow date, counterparty, and volume as criteria (and excluded location as a limiter). However, the Company did not provide the necessary WACOG calculations based on these additional transactions (DRs 768 and 769 asked for these WACOGs for all transactions identified in the response to DR 764). Thus this issue remains open.

4. Trader Compensation

A substantial portion of the Utility Trader's total compensation has come from the affiliate. Certain other utility employees have also received incentive compensation from NJRES as well as from the utility.

The incentive compensation plan for NJRES differs from that for the utility. As described elsewhere in this report, each utility employee has a personal performance plan, with individual performance objectives linked to components of his or her potential bonus. NJRES's incentive compensation program, on the other hand, is totally discretionary. The amount available for total compensation is a specified proportion (currently 15-20 percent) of NJRES's operating income. Sharing the pool among NJRES employees is based on a subjective weighting, by NJRES's Senior Vice President, of each individual's contribution to NJRES's net income.

Selected utility company personnel have also received incentive compensation payments allocated from NJRES funds. These amounts have been in addition to their Individual Incentive Plan payments from the utility. The Company reports that these amounts have been set by management's determination of each individual's contribution towards maximizing NJNG's off-system sales performance and to bring utility incentive payments closer to "market" for energy trading functions.

C. Conclusions

1. **The combined NJRES/NJNG gas supply function does not create a structure that focuses on optimizing NJNG's effectiveness in wholesale markets.** *(Recommendation #1)*

The relationship between NJNG and NJRES in wholesale markets is one of cooperation, not competition. The Company argues that this approach is in NJNG's customers' interest, because the utility could not be an effective competitor in wholesale markets without the assistance that it obtains from NJRES.

The Company protects utility customers' interests by segregating the accounts of the two affiliates, both their gas-purchase accounts and their brokerage accounts for trading natural gas

derivatives. The two affiliates are not supposed to trade with each other, in an effort to prevent value from being transferred from one to the other.
While all personnel are aware of this rule, the companies have not made substantial efforts to enforce it.

NJRES's association with the utility has parallels with the typical relationship between an external asset manager and one of its asset-management clients. If NJNG had an external asset manager, NJNG would conduct the energy planning and gas-cost reconciliation activities that it currently conducts. It would also operate gas control. An external asset manager would have lead persons trading gas and financial instruments for the utility, and that is essentially how NJNG's Utility Trader and its Trading Analyst operate; they nominally work for NJNG, but they perform as part of NJRES's integrated management of the two businesses. A substantial portion of the total compensation of these two individuals is provided by NJRES's bonus program. NJNG's transportation and exchange function is also operated by NJRES, in the same manner as NJRES operates that function for its other asset-management clients.

A key difference between NJRES's relationship with NJNG and its relationship with its other asset-management clients is in the nature of the agreements that govern the relationship. In the case of an external asset manager, there would be an asset-management agreement, which would have been negotiated at arm's length, against various competing offerors. In the case of NJNG, however, there is no asset-management agreement. The various incentive programs that the Company has negotiated with the BPU are how the consolidated NJR enterprise gets paid for the asset-management service.

There would also be periodic, critical review of performance by a utility of a third-party asset manager's performance. Here, however, there is not a substantial distinction between those who perform the functions at issue and those who might evaluate that performance. To the extent that there are policies, attention to enforcing them has been weak.

2. The organization structure, procedures, and performance reviews applicable to NJNG gas purchases and sales are not sufficient to protect utility customers. *(Recommendation #2)*

Joint management of the gas-supply function creates significant potential conflicts of interest. A structure that permits such conflicts is inappropriate because of the presence of the conflicts, irrespective of whether it can be demonstrated that those conflicts have produced harmful results. The fact that NJRES aggressively competes to provide other gas users, including other utilities in the region, with a variety of the same types of services that NJNG requires (and that NJNG receives under a common structure with NJRES) heightens concern about such conflicts. As the number of entities served by NJRES grows, so grows the opportunity to commingle assets among them, and to assign benefits among them in response to favorable contract structures.

Liberty found some brief statements of operating procedures for the utility, but little in the way of formal guidance to employees regarding how the parent wants the gas-supply function for the utility to be conducted. Missing are policies on matters like the following:

- Priority for on-system customers' interests
- Development and evaluation of gas-supply alternatives, both commodity and capacity

- Provisions (other than credit limits) for dealing with counterparties
- Dealing with the utility company's wholesale-trading affiliate
- Placement of unused capacity in secondary markets.

Also lacking are statements of procedure that would implement these policies. As a consequence, performance measurement in the conduct of the gas-supply function occurs without any formal policy framework. NJNG gas-supply employees' feedback regarding their job performance consists primarily of: (a) what their peers think of them, and (b) whether they are awarded some share of NJRES's bonus pool.

The lack of a policy framework leaves employees to look to their own values, and then to the incentives presented to them, to guide them in the conduct of their responsibilities. The fact that increasing profits for the affiliate is the surest way to additional rewards within the Company invites employees to favor the affiliate over the utility in making decisions.

Internal Audit conducts audits of the utility gas-supply function twice per year, and routinely finds that the utility and its affiliate do not do business with each other, when in fact they have.

Traders have engaged counterparties as intermediaries in trades between the utility and the affiliate in order to avoid the Company's (unwritten) rule against trading between the affiliates. Efforts to examine compliance with the policy have not been sufficient to identify non-compliant behavior; it is at this point clear that control efforts must address intentional efforts to get around existing policy.

3. Including selected utility employees in NJRES's incentive compensation plan is not appropriate. (*Recommendation #3*)

NJRES exacerbates the inherent conflict-of-interest problem presented by its combined organization by incenting key utility employees to contribute to NJRES's success and by rewarding them primariliy on the basis of affiliate, rather than utility, results. In response to a data request, the Company advised Liberty that NJRES bonuses to NJNG employees are determined on the basis of those employees' contribution to the utility's off-system sales program. At other times, commodity-purchasing performance was cited as a factor. None of these criteria is documented in personal performance plans, and the affected utility employees may believe that, like all NJRES employees, their bonuses are a direct function of NJRES's net income. For employees who are supposed to be competing vigorously with NJRES for gas purchases and sales, and who are in the same markets for financial instruments, the situation is problemmatic.

4. Important questions about potential customer harm require additional analysis. *(Recommendation 4)*

The tables in the discussion of potential harm to NJNG from the identified transactions indicate only a small level of potential harm to customers (about $500,000 total since 2001). NJNG needs to complete a more detailed analysis to assure that the transactions in the table do not ultimately represent only a subset of potentially troublesome transactions across the audit period.

The Company's analysis does not include transactions for 1999 and 2000. Liberty's preliminary analysis showed a potential for a relatively large number of linked transactions in this period. The recent NJRES analysis did not address these years due to data limitations. NJNG and NJRES were, however, able to provide Liberty with transaction data for these years during the audit. That data did not include an important criterion for Liberty; *i.e.*, transaction entry date. However, an analysis of linkage can proceed on the basis that a very high percentage of daily transactions were entered the prior day, and that a very high percentage of monthly transactions were entered during bid week of the prior month. For purposes of baseline analyses, Liberty would not ordinarily make this assumption. However, given the existence of linked transactions otherwise disclosed during the audit. Liberty believes that an analysis under this assumption is appropriate for assessing the potential for harm to customers.

To date, the Company has found no way, under the direction of NJRES, to perform an analysis of transaction data from 1999 and 2000. Given the potential for a large number of linked transactions to have occurred in this period, however, efforts to find a way to perform that analysis should continue.

NJRES also did not examine the question of linkage of transactions at non-common delivery locations that nevertheless could have provided an opportunity for value transfer from NJNG to NJRES. That analysis also remains important, particularly in light of the acknowledgement by NJRES that it "studied" the methods and findings of Liberty's audit of linked transactions involving Elizabethtown Gas and its affiliate.

D. Recommendations

Liberty asked senior company management to address its views about corrective actions to address inter-affiliate transactions. The company plans to:

- Implement new controls on the relationship
- Add a new level of gas-procurement management at the utility
- Employ utility-dedicated staffing
- Within 12 months of the date of a BPU order adopting this report, conduct a review of the effectiveness of these changes and provide a report on that review to the BPU Staff.

The Company's description of the new controls is attached to this chapter as an appendix. These steps may offer significant improvements over current practice. Liberty recommends additional steps, however. These recommendations assume the implementation of the steps described in the appendix.

1. **Provide on an interim basis for dual reporting of the new utility manager to be created and require a showing that further separation of the common supply functions should not take place at the end of 12 months.** *(Conclusion #1)*

Liberty believes that establishing a completely separate organization, as opposed to creating separate staffs operating under common executive direction has been demonstrated to be appropriate to the circumstances here. The short-term concern with that approach is that there is too little history of independent operation to allow for sufficient confidence that a sudden transition to that approach would come without undue disruption. The Company's proposed use

of the split-staff/common-senior-management approach represents a measured point of departure in moving toward increased separation.

Liberty does not agree at this point that this first step will prove sufficient on a long-term basis. The 12-month report of the Company will serve as an important milestone in addressing that question. Liberty believes that the background to that report should be more prescriptive. Specifically, Liberty recommends that the BPU require a report at the end of 12 months addressing progress under the new structure and a showing of cause why separation should not at that point extend to executive direction of the utility and non-utility supply functions.

Moreover, Liberty believes that the new utility manager should have a dual reporting relationship to the NJRES vice president and to a separate senior officer, preferably the CEO. That relationship should include interaction sufficient to allow the separate senior officer to affirmatively conclude that there is no inappropriate linkage between utility and non-utility trading and other decisions affecting the utility's supply, transportation, and storage portfolio. The utility manager should meet frequently with the separate officer, and should report progress in creating and assuring proper separation to the independent utility directors at each utility board meeting. The goals for the utility board members for the next year should specifically include developing information about the kinds of inappropriate transactions that can take place between the utility and non-utility in supply-related matters, and adopting a set of tangible, addressable measures for the continuing monitoring of success in satisfying those measures.

2. **Assure that the new utility manager and staff to be added have experience appropriate to utility needs and comparable to that of the NJRES counterparts.** *(Conclusion #2)*

The utility needs more than its own staff; it needs personnel who have experience and capabilities commensurate with those of the common staff. No longer should the utility be considered the greenhouse for growing NJRES resources. NJNG needs to staff the function with a particularly experienced manager, and one preferably from outside the current organization. New front-office personnel need to be capable of performing all the required utility activities. There should be no linkage between utility personnel compensation and the success of NJRES.

3. **Develop performance plans for utility employees based on their performance for the utility.** *(Conclusion #3)*

Liberty strongly recommends that the utility develop conventional performance plans for the Utility Trader and other personnel that are driven by their performance for the utility. Liberty expects that the compensation packages for the Utility Trader and the Trading Analyst will have to be determined with reference to the value of those skills in order to attract capable individuals to those jobs. Thus, the traders' compensation packages may have to be quite different from other utility personnel. The utility will have to provide a competitive compensation package, however, in order to attract and retain top talent. The plan developed should not create a structure that substantially disadvantages utility traders relative to those with whom they work in close proximity in a combined organization.

4. **Conduct a structured, focused review of FY1999 and 2000 transactions, and non-common-delivery-point transactions, in order to identify the full range of potentially linked transactions and perform an objective assessment of their impact.** *(Conclusion 4)*

There needs to be a formal, structured, objective examination of the remaining potential means for transferring value inappropriately from NJNG to NJRES. The results of that review should be reported to the BPU within three months. The review should examine as well the degree to which affiliate interests have affected utility capacity-commitment decisions. Pending completion of this examination, and acquisition or development of additional supply-related analytical capabilities discussed elsewhere in this volume, the utility should defer any further commitments to gas transportation and storage facilities.

The examination should be conducted under the direction of the Internal Audit Department. Efforts to find a way to examine data for 1999 and 2000 should not be suspended unless and until that department certifies that all reasonable means to capture and use the required data have been exhausted.

Appendix

Area	Action	Control	By	Frequency	Performed Currently
Internal Audit	Assign dedicated auditor to examine:	NJRES/NJNG transactions.	IAD	Full-Time	Yes.
		NJRES/NJNG Credit Risk.	IAD	Annually	Yes
		NJNG Gas Purchases.	IAD	Annually	Yes
		Joint Ventures.	IAD	Annually	No
		Service Agreements.	IAD	Annually	No
		Any Other Related Matters.	IAD	Annually	No
	Quarterly Reports To Audit Comm.	Controls Implementation Status.	IAD	Quarterly	No
		NJRES/NJNG Transactions.	IAD	Quarterly	No
Risk Management Committee Review	Document Review	Non-ICE (Et al.) affiliate buys, sells, park & loans, and capacity sharing transactions.	RMC	Monthly	No
		Automated reports of non-ICE (Et al.) like volume/like term transactions involving affiliates.	RMC	Monthly	No
		Automated reports of non-ICE (Et al.) like volume/ like term transactions involving affiliates and joint ventures.	RMC	Monthly	No

		Automated reports of non-ICE (Et al.) like volume/ like term transactions involving affiliates and companies where there are service agreements.	RMC	Monthly	No
	Expand RMC Review	Unused capacity costs.	RMC	Monthly	No
		Option premiums.	RMC	Monthly	No
		Trader limit exceptions.	RMC	Monthly	No
		Undesignated derivatives.	RMC	Monthly	No
		Hedging efficiency.	RMC	Monthly	No
		A list of top ten trading counterparties.	RMC	Monthly	No
		A list of top ten dollar trades.	RMC	Monthly	No
		A list of top ten volume trades.	RMC	Monthly	No
		A no reportable conditions sign-off by RMC members.	RMC	Monthly	No
	Quarterly Reports To Audit Comm.	Summaries of RMC activities.	RMC	Quarterly	No
Affiliate Transactions	Documentation, Review, And Reporting	Non-ICE (Et al.) affiliate buys, sells, park & loans, and capacity sharing transactions.	NJRES/ NJNG	Monthly	No

Automated reports of non-ICE (Et al.) like volume/ like term transactions involving affiliates.	NJRES/ NJNG	Monthly	Yes
Automated reports of non-ICE (Et al.) like volume/ like term transactions involving affiliates and joint ventures.	NJRES/ NJNG	Monthly	No
Automated reports of non-ICE (Et al.) like volume/ like term transactions involving affiliates and companies where there are service agreements.	NJRES/ NJNG	Monthly	No
Non-ICE (Et al.) affiliate buys, sells, park & loans, and capacity sharing transactions.	NJRSC	Monthly	No
Independently run automated reports of non-ICE (Et al.) like volume/ like term transactions involving affiliates.	NJRSC	Monthly	No
Idependently run automated reports of non-ICE (Et al.) like volume/ like term transactions involving affiliates and joint ventures.	NJRSC	Monthly	No
Independently run automated reports of non-ICE (Et al.) like volume/ like term transactions involving affiliates and companies where there are service agreements.	NJRSC	Monthly	No

	Review	ICE (Et al.) Transactions For Propriety.	NJRSC	Monthly	No
General Trading	Develop, Run, Document, and Report	Control Points Of Supervisory Review of Daily Trades.	NJRES/ NJNG	Daily	No
		NJRSC Review Of Daily Trades.	NJRSC	Daily	No
		Trader Limit Exceptions.	NJRES/ NJNG NJRSC	Daily	No
		Undesignated Derivatives.	NJRES/ NJNG	Monthly	No
		Top Ten Counterparties.	NJRSC NJRES/ NJNG	Monthly	No
		Top Ten Dollar Trades.	NJRSC NJRES/ NJNG	Monthly	No
		Top Ten Volume Trades.	NJRSC NJRES/ NJNG	Monthly	No
Trader Code Of Conduct		Trader compliance testing and reporting.	NJRSC NJRES/ NJNG	Annually	No
		Annual Training Of Traders On Affiliate Relations Standards.	NJRES/ NJNG	Annually	No

	Certification From Each Trader, Management Member, and Senior Vice President acknowledging receipt of, understanding of, and compliance with Trader Code Of Conduct With Specific Reference To Affiliate Relations Standards.	NJRES/ NJNG	Annually	No
	Disclosure of trader personal and family brokerage accounts.	Traders	Annually	No

VI. Measurement and Balancing

A. Background

Lost and unaccounted-for (LAUF) gas results primarily from the following sources: metering differences, actual physical loss, company use, and accounting discrepancies. Metering differences also includes inaccuracies or errors introduced through the conversion of pipeline supply, typically billed by energy content, and end-use sales, typically billed volumetrically (except, perhaps, for the largest customers). This parameter takes on increasing importance where there is a mix of gases of differing energy contents, which, for example is typically the case between domestic gas and Canadian gas.

Meters at gate stations measure the gas coming into a distribution company's system. Meters at each customer's location measure the amount sold or transported to each customer. Before the advent of transportation of customer-owned gas, the distribution company simply compared the total of the amounts going to its customers to the amount it received, less any adjustment for quantities stored. The LDC then assigned the difference among company-use gas, such as gas for compressor fuel and space heating of company facilities, and unaccounted-for gas. The company computed rates by dividing total purchased gas cost by the number of units sold.

Safety concerns and other reasons led to metering strategies designed to isolate unaccounted-for gas from company usage. Moreover, LDCs designed metering strategies to locate where gas was being lost as a means of guiding and prioritizing line repair and replacement programs. The development of improved leak detection technology, especially gas-ionization detection devices, has aided these efforts.

Transportation of customer-owned gas has made the problem more complicated. The advent of transportation services requires that purchased-gas cost computations recognize and allow for specific streams that enter the distributor's system at the same points as the supply-system customer gas. Customer-owned volumes being transported by the LDC must bear a separate charge for any company-use gas and unaccounted-for gas volumes.

Another new problem arises from imbalances associated with customer-owned gas. These imbalances occur when the customer's supplier delivers into the LDC's system a quantity different from what the customer burns. Imbalances occur because of the physical design of the transmission and distribution system, and because of the nature of the measurement and billing process. On the system configuration side, the customer's gas and system-supply gas are co-mingled in the same pipe. When the customer opens the valve, gas flows regardless of whether his supplier actually delivered what he was supposed to deliver. If the quantities received differ from the quantities delivered, the customer must be made responsible for the difference in order to avoid imposing costs on system-supply customers. On the measurement and billing side, there exists a time lag between when the supplier puts gas in at the upstream end of the pipeline and when the customer takes gas out at the downstream end. These time lags vary, depending on the locations of the sources and uses of the gas. Measurement and billing cycles must account for these lags.

Liberty's examination in this task focused on evaluating the Company's metering strategies, and how metering data is used in monitoring LAUF. Liberty examined whether metering and testing programs conform to industry standards and whether balancing strategy and practices should are fair to all customers.

B. Findings

1. Strategies for Minimizing LAUF

The Company's approach to minimizing LAUF focuses on system integrity; *i.e.*, making sure that the system does not leak, and on careful volume measurement, especially of gas coming into its system. Volume Three of this report addresses NJNG's approach to minimizing leaks, including leak surveys and leak repair. This chapter examines measurement strategies and use of the measurement data in monitoring LAUF.

NJNG takes supply from relatively few gate stations and from its own LNG facilities. Gas Supply personnel perform daily checks of meters on those facilities against counterpart readings on the Company's SCADA system. They report immediately any discrepancy of two percent or more to Energy Services personnel, who initiate an investigation. NJNG calibrates pipeline meters periodically, but meter calibration generally comprises the first step in the event of a discrepancy.

NJNG's LAUF calculation compares meter data to volumes billed by the Company. Meter readings at customer locations determine volumes billed. The calculation compares the sum of all meter readings for volumes into the system to the sum of volumes billed, on a rolling 12-month basis. Both volumes into the system and volumes billed are adjusted to exclude off-system sales and sales to electric power generators. Company-use gas, which comes from about 50 meters measuring gas consumed in various uses, is deducted from the volume going into the system. The LAUF quantity is the difference between the two sums. NJNG compares that quantity to the sum of the volumes received to determine the LAUF percentage.

The next table shows the LAUF calculation for rolling 12-month periods since the last quarter of 2003. In late 2003, the calculated LAUF percentage ran between 0.84 and 0.89. By late 2006, the calculated percentage had declined to 0.57 to 0.63

LAUF Calculation

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NEW JERSEY NATURAL GAS COMPANY - UNACCOUNTED FOR GAS (MEASUREMENT - DTH's)

DATE	TOTAL SENT OUT INCL. LNG & LPG. (COL.1)	TOTAL SALES (COL.2)	COMPANY USE (COL.3)	ELECTRICS AND OFF SYSTEM (COL.4)	ADJUSTED SEND OUT (COL.5) (1 - 4)	ADJUSTED SALES (COL.6) (2 + 3 - 4)	UNACC'T FOR GAS (COL.7) (5 - 6)	12 MONTH ADJUSTED SEND OUT	12 MONTH ADJUSTED SALES	12 MONTH UNACC'T FOR GAS	% UNACC'T FOR GAS 12MO.AVG
Sep-03	3,702,488	3,639,852	2,270	1,816,485	1,886,003	1,825,637	60,366	72,224,990	71,621,406	603,584	0.84%
Oct-03	6,928,839	6,891,306	8,708	3,055,663	3,873,176	3,844,351	28,825	72,152,145	71,545,865	606,280	0.84%
Nov-03	10,102,552	10,043,594	8,604	4,357,599	5,744,953	5,694,599	50,354	70,902,346	70,292,203	610,143	0.86%
Dec-03	15,283,885	15,197,691	5,712	4,997,487	10,286,398	10,205,916	80,482	70,591,084	69,965,271	625,813	0.89%
Jan-04	17,584,350	17,481,776	26,067	3,228,662	14,355,688	14,279,181	76,507	71,529,244	70,920,216	609,028	0.85%
Feb-04	15,013,435	14,921,743	37,889	4,647,096	10,366,339	10,312,536	53,803	70,507,303	69,935,710	571,593	0.81%
Mar-04	12,543,078	12,476,970	14,309	4,461,820	8,081,258	8,029,459	51,799	70,259,817	69,708,107	551,710	0.79%
Apr-04	7,793,341	7,765,959	13,522	2,816,314	4,977,027	4,963,167	13,860	69,112,614	68,570,232	542,382	0.78%
May-04	6,701,025	6,685,400	5,780	4,290,565	2,410,460	2,400,615	9,845	67,957,315	67,454,794	502,521	0.74%
Jun-04	6,322,152	6,313,169	9,523	4,291,348	2,030,804	2,031,344	(540)	67,724,960	67,253,584	471,376	0.70%
Jul-04	6,370,673	6,354,474	7,212	4,471,783	1,898,890	1,889,903	8,987	67,767,036	67,357,410	409,626	0.60%
Aug-04	5,638,477	5,619,573	1,787	3,757,584	1,880,893	1,863,776	17,117	67,791,889	67,340,484	451,405	0.67%
Sep-04	5,390,037	5,396,310	1,518	3,513,816	1,876,221	1,884,012	(7,791)	67,782,107	67,398,859	383,248	0.57%
Oct-04	6,546,125	6,426,979	85,910	2,901,788	3,644,337	3,611,101	33,236	67,553,268	67,165,609	387,659	0.57%
Nov-04	11,409,372	11,366,784	6,065	5,282,949	6,126,423	6,089,900	36,523	67,934,738	67,560,910	373,828	0.55%
Dec-04	16,544,819	16,480,054	15,476	6,521,617	10,023,202	9,973,913	49,289	67,671,542	67,328,907	342,635	0.51%
Jan-05	16,784,097	16,693,741	28,047	4,453,481	12,330,616	12,268,307	62,309	65,646,470	65,318,033	328,437	0.50%
Feb-05	14,917,297	14,730,789	115,466	4,908,685	10,008,612	9,937,570	71,042	65,288,743	64,943,067	345,676	0.53%
Mar-05	14,016,512	13,927,125	19,259	4,151,296	9,865,216	9,795,088	70,128	67,072,701	66,708,696	364,005	0.54%
Apr-05	6,632,223	6,604,151	17,087	2,066,253	4,565,970	4,554,985	10,985	66,661,644	66,300,514	361,130	0.54%
May-05	6,232,639	6,203,265	7,005	2,777,007	3,455,632	3,433,263	22,369	67,706,816	67,333,162	373,654	0.55%
Jun-05	6,694,658	6,677,324	4,547	4,725,569	1,969,089	1,956,302	12,787	67,645,101	67,258,120	386,981	0.57%
Jul-05	6,679,259	6,679,979	2,257	4,918,125	1,761,134	1,764,111	(2,977)	67,507,345	67,132,328	375,017	0.56%
Aug-05	6,806,359	6,806,219	5,450	5,054,921	1,751,438	1,756,748	(5,310)	67,377,890	67,025,300	352,590	0.52%
Sep-05	6,194,958	6,170,070	1,107	4,379,799	1,815,159	1,791,378	23,781	67,316,828	66,932,666	384,162	0.57%
Oct-05	6,590,120	6,567,382	8,032	3,235,734	3,354,386	3,339,680	14,706	67,026,877	66,661,245	365,632	0.55%
Nov-05	9,541,834	9,557,618	(85,368)	3,853,427	5,688,407	5,618,823	69,584	66,588,861	66,190,168	398,693	0.60%
Dec-05	14,460,974	14,378,638	6,835	3,524,027	10,936,947	10,861,446	75,501	67,502,606	67,077,701	424,905	0.63%
Jan-06	11,713,543	11,648,465	15,931	2,340,859	9,372,684	9,323,537	49,147	64,544,674	64,132,931	411,743	0.64%
Feb-06	12,593,308	12,501,586	24,713	2,814,490	9,778,818	9,711,809	67,009	64,314,880	63,907,170	407,710	0.63%
Mar-06	13,284,498	13,228,386	15,403	5,418,895	7,865,603	7,824,894	40,709	62,315,267	61,936,976	378,291	0.61%
Apr-06	6,495,728	6,464,158	29,375	2,435,165	4,060,563	4,058,368	2,195	61,809,860	61,440,359	369,501	0.60%
May-06	5,467,169	5,446,399	12,735	2,894,267	2,572,902	2,564,867	8,035	60,927,130	60,571,963	355,167	0.58%
Jun-06	4,517,809	4,498,631	5,395	2,559,418	1,958,391	1,944,608	13,783	60,916,432	60,560,269	356,163	0.58%
Jul-06	5,821,025	5,828,785	4,543	4,056,984	1,764,041	1,776,344	(12,303)	60,919,339	60,572,502	346,837	0.57%
Aug-06	5,402,986	5,363,576	8,597	3,630,358	1,772,628	1,741,815	30,813	60,940,529	60,557,569	382,960	0.63%

NJNG meters larger-volume customers daily and others monthly. The company reads meters for residential customers bi-monthly, except for the summer months, when they are not read at all. The Customer Service Department reads meters and manages metering data.

2. Approaches to Balancing

The Company's Gas Management System (GMS) tracks supplier volumes from the point at which they enter an NJNG resource (such as a receipt point for one of NJNG's pipeline transportation contracts) to one of the Company's city gates. Continuously-metered customers must balance daily; *i.e.*, their consumption must match their suppliers' deliveries each day. Monthly-metered transportation-service customers must balance monthly. The Company's tariffs provide for cashing out imbalances at specified intervals, *i.e.*, daily for daily-metered customers, and monthly for monthly-metered ones. The Company's Energy Services personnel account for the gas that comes into the system promptly and carefully. Information verified by them is up-loaded directly into the Company's accounting system.

C. Conclusions

1. NJNG uses an appropriate approach for managing LAUF.

The Company monitors LAUF by comparing the sum of metered volumes into its transmission and distribution system with the sum of billed volumes out of the system on a rolling 12-month basis. This approach conforms to standard industry practices in this area.

2. The line-loss factor in the Company's transportation-service tariffs is higher than actual losses.

The Company charges its transportation-service customers a two-percent line-loss factor; *i.e.*, for every unit that those customers' suppliers deliver, the customers are charged for transportation of 1.02 units. This factor works its way into the LAUF calculation as part of the "volumes out of the system" figure, as that figure is based on billed volumes, rather than on measured volumes. As a result, the total of volumes out of the system slightly exceed what NJNG actually measures.

Liberty estimates that this provision makes the total of volumes out of the system too high by about 0.125 MMDth,[16] or about 0.2 percent.[17] Applying the Company's method for calculating LAUF with this adjustment would yield a LAUF rate for all customers of about 0.9 percent. That level (0.9 percent) is well within the acceptable range for this parameter.

On the other hand, a two-percent line-loss factor is common for transportation services. While high for actual losses from NJNG's system, that factor may well be standard for services of this type in New Jersey. Thus, the fact that it is higher than actual losses on NJNG's system is not necessarily a reason to change it.

D. Recommendations

Liberty has no recommendations in this area.

[16] FY 2006 transportation volumes were 7.4 MMDth firm, and 5.2 MMDth interruptible. (Source: New Jersey Resources 2006 Annual Report, at p. 46.) 12.6/1.01 = 12.475. 12.6 – 12.475 = 0.125.
[17] 0.125/60.6 = .002

VII. Market Conditions

A. Background

This chapter addresses the following topics:

- A summary of numbers of sales and transportation customers and volumes
- A general overview of services offered
- A discussion of tariffed and non-tariffed (negotiated rate and other) services offered
- A discussion and analysis of the third-party transportation program in NJNG's territory
- A discussion and analysis of the small-customer transportation program in NJNG's territory and in the larger context.

The evolution of gas markets, and in particular competition in the residential market, appears to have reached a plateau in New Jersey and other states that have sought to introduce retail competition. Competition was introduced, pilot programs were adopted, competition was extended to all customers, and a substantial number of suppliers entered the market. Reliability has been maintained in the face of numerous challenges, and it has been demonstrated clearly that it can be maintained in the competitive environment, provided that it receives reasonable and appropriate attention.

The markets are certainly past the introductory or start-up phase now, and are well into a second phase. That phase may represent the new steady state condition, absent any significant regulatory action or disruptive external force. And, as will be demonstrated here, the markets have not evolved and developed as anticipated.

B. Findings

1. Customers and Volumes

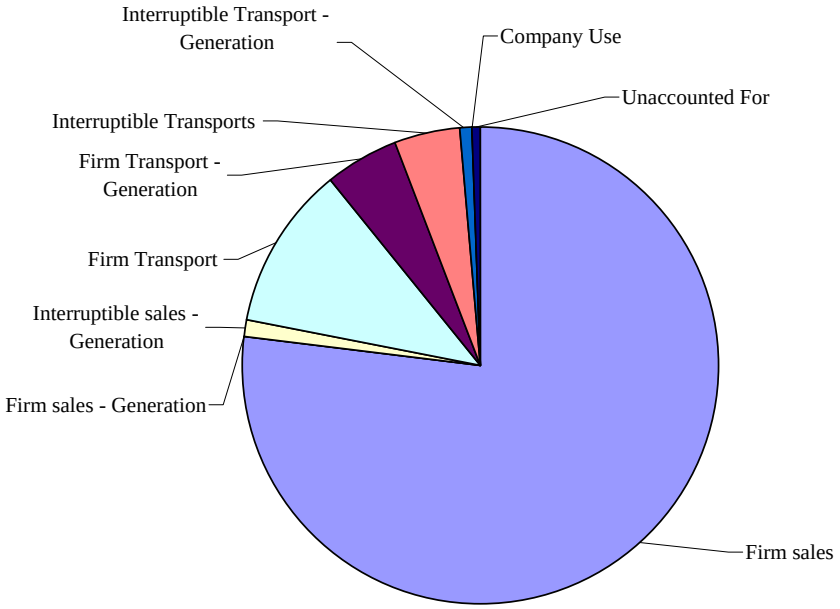
The next table shows the breakdown of throughput on the NJNG system, excluding capacity releases and off-system sales, by sales, transportation, and other categories.

NJNG Throughput FY 2006

Type of Service	Therms (Millions)	% of Total Throughput
Firm sales	498.1	76.86
Firm sales – Generation	0.1	0.02
Interruptible sales – Generation	6.9	1.07
Firm Transport	73.4	11.33
Firm Transport – Generation	31.3	4.83
Interruptible Transports	29.7	4.58
Interruptible Transport – Generation	4.3	0.67
Company Use	0.5	0.08
Unaccounted For	3.7	0.56
Totals	648.1	100.00%

This next figure shows this breakdown graphically.

Throughput FY 2006



2. Tariffed Sales Services

NJNG offers the following tariffed sales services to customers:

- Residential Sales Service (RS) – traditional residential service
- Residential Air Conditioning (RAC) – residential service for gas-fired air conditioning

- General Service (GS) – traditional commercial service
- Firm Cogeneration (FC) – firm gas for use in cogeneration facilities
- Cooling, Air Conditioning, and Pool Heating (CAC) – Non-residential applications
- Interruptible Sales (IS) – for commercial and industrial customers who sign a service agreement and have alternate fuel capability
- Interruptible cogeneration – (IC) – interruptible gas for use in cogeneration facilities
- Incremental Gas Service (IGS) – gas provided on request to IS, IC, IT and NGV customers when the company has the capability to deliver

Commercial services are further subdivided into High Load Factor (HLF), for customers with a load factor greater than 58 percent, and Low Load Factor (LLF) for customers with a load factor less than or equal to 58 percent.

3. Tariffed Transportation Services

NJNG offers the following tariffed transportation services:

- Comprehensive Transportation and Balancing Service (CTB) – firm transportation service to commercial customers, in which NJNG prescribes the delivery requirements and provides balancing, and automated meter reading (AMR) is not required
- Firm Transportation (FT) – firm transportation to commercial customers, in which supplier specifies delivery quantities and provides balancing, and AMR is required
- Interruptible Transportation (IT) – similar to FT, except that NJNG may interrupt when delivery is detrimental to firm customers
- Residential Transportation (RT) – firm transportation service to residential customers, similar to CTB service
- Small Commercial Rebundled Service (SCR) – firm transportation service available to commercial customers who use less than 5,000 therms per year, otherwise similar to CTB service
- Distributed Generation (DG) – firm transportation service available to commercial or residential customers using distributed-generation technologies, such as microturbines or fuel cells.

Of the above services available in the tariff, not all are in use. In particular, NJNG does not have any customers taking service under the Residential or Commercial gas air conditioning, Firm Cogeneration, or Incremental Gas Service classifications.

4. Non-Tariffed Services

Many gas utilities offer other, non-tariff services, including “bypass” rates for customers with competitive alternatives, standby service, and special negotiated rate contracts for large customers with unique needs, such as electric generators. Due to the configuration of pipelines in its service territory, as well as the general dearth of large industrials, NJNG does not have any bypass-rate customers, and has not had any customers approach it for such a rate since 1979. Consequently, the Company does not have a written bypass policy. The Company also does not offer a standby rate, except to the extent that there is a penalty Standby Service Charge assessed to third-party suppliers serving the RT, SCR and CTB classes if they fail to deliver the minimum required daily volumes more than three days during a rolling 12-month period. That service is

assessed until the supplier has delivered without a single-day failure for 12 months. During the audit period, it was assessed nine times, to eight different suppliers.

NJNG has four negotiated-rate contracts with generators and cogenerators, three of which were in place at the beginning of, and continued in effect under the same terms during the audit period. The next paragraphs address them in the order in which the came into existence.

Sayreville

NJNG serves interruptible gas to four combustion turbines at Jersey Central Power & Light Company's (JCP&L's) Sayreville Generating Station under terms of a contract negotiated in the early 1980s. NJNG charges the Sayreville plant its lowest cost of gas available at the time the service is provided, plus certain adders and 10 cents/Dth margin. The first 10 cents/Dth is credited to ratepayers, and the remaining margin is shared 90/10 between customers and ratepayers.

Lakewood Cogeneration

By contract executed November 23, 1988, NJNG agreed to provide firm, year-round gas transportation to a dispatchable cogeneration facility in Lakewood NJ developed by CNG Energy Company (CNG). The contract provided that NJNG would construct facilities, at a cost of $19 million, to interconnect the Transco and/or Texas Eastern pipelines to the Lakewood plant to enable delivery of 50,000 Mcf/day at a minimum specified pressure. The target in-service date was April 1, 1991, with penalties applicable if the plant was operational by that date but NJNG's facilities were unable to provide gas. The transportation portion of the contract has a 20-year term beginning with the operational date of the plant. If CNG requires transportation beyond that term, the contract continues in force, except for a renegotiation of certain terms relating to the residual value of NJNG plant and O&M expenses. CNG may buy gas from NJNG or other suppliers, and NJNG agreed to provide interruptible gas.

The contract provides for an annual Capacity Reservation Charge (demand charge) of $2.614 million, payable monthly. NJNG retained recall rights for a maximum of 30 days per year in the event it needed a portion or all of the capacity. If NJNG exercised the recall rights and gas were otherwise available to CNG, NJNG would pay to CNG the incremental costs of alternate fuel. If other gas was unavailable to CNG, there would be no incremental charge to NJNG.

NJNG also agreed that, upon request from CNG, it would double the level of available firm capacity to the extent consistent with the specified physical piping facilities, to 100,000 Mcf/day, at a charge to be agreed upon. NJNG also agreed to provide additional incremental capacity, over and above that level, through various additional options, to be constructed and paid for pursuant to a separate agreement having the same or similar terms to this agreement. Neither of those provisions has been exercised.

The contract also provided that NJNG would sell up to 20,000 Mcf/day of interruptible gas for use in the plant, at a price tied to the cost of alternate fuel to the facility. NJNG would charge the lowest cost of gas available to it at the time plus certain adders and 10 cents/Dth margin. CNG's alternate price referenced in the contract is the lowest price of short-term gas available to it plus

the lowest applicable transportation and related charges, and NJNG retained the right to verify CNG's alternate price.

Margin from the sale of gas to the Lakewood Cogeneration Plant is treated identically to the Sayreville plant. The contract between Lakewood and NJNG was approved by the BPU in May 1989 in Docket GM89021146, and the rate treatment of revenues was established in the company's last base rate case in January 1994 in Docket GR93040114.

Forked River Plant

Under the terms of an agreement executed February 1, 1990 between NJNG and JCP&L, NJNG provides interruptible gas to two combustion turbines, dual-fuel (gas and #2 fuel oil) peaking units designed and intended for operation on an economic-dispatch basis, to be owned and operated by JCP&L at its Forked River facility. The contract had an initial three-year term and continues until either party requests termination, which requires 180 days' notice.

Initially at its own shareholder expense, NJNG constructed approximately 5 miles of 20-inch main, along with metering and regulating equipment at the plant site. NJNG received BPU approval to add those facilities to rate base and continues to own and operate them. To finance the construction, JCP&L made a one-time payment to NJNG of $900,000. JCP&L constructed, owns and operates the pipe from the metering station to the turbines.

Under the terms of the agreement, NJNG would file for rate-base treatment of the new plant when firm service requirements developed. NJNG held the $900,000 in a deferral account, earning interest at its rate of return, until such time as the plant was included in rate base. At that time, the funds would be credited to ratepayers. The contract contained specific terms for the treatment of revenues during the period prior to inclusion of the plant in rate base, with all margin retained by NJNG, in recognition of the fact that it was not earning a return on the plant.

Because the turbines have dual-fuel capability, the contract price of gas is tied to the price of No. 2 fuel oil. JCP&L agreed to burn gas when available whenever the price of gas was less than the lowest posted price for oil, except when required to burn oil for testing or other purposes.

The price of gas is determined weekly, and tied to the lower of: a) the specified index in the *Oil Buyer's Guide* or b) the average of the No. 2 Fuel Reseller Barge Prices, which were posted for four resellers at the time the contract was signed. That price is adjusted to reflect the difference in heating values of oil and gas, and then reduced by 15 cents/Dth as an incentive for JCP&L to burn gas.

By BPU Order on January 5, 1994 in Docket GR93040114, gas service to Sayreville and Forked River was approved to continue according to the contractual terms for at least five years from the date of a stipulation addressing those issues. At that time, or sooner in the event of a major repowering which significantly increased the gas requirements, the BPU or any other party may petition for reconsideration of the pricing methodology used.

Ocean Peaking Power

NJNG signed an agreement, effective October 28, 2002 with Ocean Peaking Power, LLC (OPP) an independent generator operating owning and operating two combustion turbines totaling 330 MW at Lakewood NJ, (adjacent to the Lakewood Cogeneration facility addressed previously). OPP would sell its output into the PJM system. NJNG agreed to provide firm transportation service from a specified receipt point in Jamesburg NJ on the Texas Eastern pipeline to the plant. Service was scheduled to begin upon the earlier of commercial operation of the plant, expected no later than August 1, 2003. The contract is for 10 years, with an automatic rollover year-to-year unless terminated with at least six months' notice.

To serve OPP, NJNG constructed facilities to connect the plant to its existing high-pressure system and a metering station on the plant site. NJNG's construction costs were financed with internally-generated funds.

The contract provides for a maximum daily quantity of 56,000 Dth/day with specified maximum hourly volumes and minimum pressure during the summer period (May 15 – September 15) and best efforts, with no specified requirements otherwise. Rate terms are specified in the contract as follows:

Terms of Service	Rates and Charges
Monthly Demand Charge	$62,500
Variable Rate: May 15 – Sept 15	$0.1050/Dth
Sept 16 – Nov 30	$0.2500/Dth
Dec 1 – Feb 28/29	$0.5250/Dth
Mar 1 – May 14	$0.2400/Dth
Fuel Retention	1%
Operational Balancing Charge	$0.1250/Dth/Day

By Decision and Order dated June 20, 2003 in Docket GR02120947, the BPU accepted a stipulation submitted by BPU Staff, the Ratepayer Advocate, and NJNG. That stipulation provided for the first four years of the agreement, 50 percent of gross margins would be credited to ratepayers through the BGSS clause, and 50 percent would be retained by NJNG. For the remaining six years of the primary term of the agreement, sharing would be set in the BPU's review of all of NJNG's incentives, expected to begin prior to October 31, 2003. All fuel retained by NJNG under the fuel retention provisions, and all operational balancing charge revenues, would be credited to ratepayers through the BGSS clause. To the extent there exists a revenue deficiency such that revenues do not fully cover the capital costs associated with this project, the deficiency will be made up solely by NJNG.

5. Transportation Programs

Third Party Suppliers

Any customer may technically function as its own supplier, which is sometimes the case with very large customers. NJNG has no such customers; all transportation customers procure commodity and transportation services from suppliers.

Under New Jersey Administrative Code, third-party suppliers must be certified by the BPU Energy Division. The BPU website offers all initial and renewal licensing documents and related instructions. A supplier seeking a license must be registered with the New Jersey Secretary of State and must file a four-page *Energy Agent and Private Aggregator Registration* application together with a $250 non-refundable application fee and an $800 Gas License Fee, refundable if the application is rejected. Suppliers must maintain a surety bond of $250,000. License renewals cost $200. Suppliers must also execute a standard, BPU-approved *Third Party Supplier Agreement* with each utility.

Following certification by the BPU, a supplier may sign up with NJNG. All potential suppliers receive a copy of the Company's Third-Party Supplier Handbook, a thorough and comprehensive document which addresses, among other things, the following topics:

- Contact personnel, with contact information
- Supplier Certification, Licensing and Accreditation information and forms
- Billing Options Discussion
- Service Classifications Information
- Customer Enrollment Information
- Billing Data Requirements
- Electronic Data Interchange (EDI) information
- Nominations procedures
- Guide to using the Company's Electronic Bulletin Board (EBB).

To begin serving customers on the NJNG system, suppliers must sign a marketer/broker agreement with NJNG and post an initial security deposit, set at $25,000, $50,000 and $75,000, to serve residential, commercial or both types of customers, respectively. The deposit may be satisfied by cash, a letter of credit, surety bond, or a parental guarantee if the parent has a Standard & Poor rating of BBB or higher. After the Company has some experience with the supplier's volumes and customers, the deposit is recomputed pursuant to a formula tied to estimated peak usage of the supplier's customer base, taking into account the billing mechanism used, which affects NJNG's exposure.

Suppliers may bill for only their own service, for both NJNG's service and their own (supplier consolidated billing), or have NJNG bill for their service (utility consolidated billing). Suppliers may also use more than one approach for different types of customers. Of the 13 active suppliers, 10 use a combination of dual billing and either utility or supplier consolidated billing, while the remaining three use only one approach and are equally spread over the three options.

The Company maintains a monthly *Supplier Deposit Spreadsheet*, which tracks each supplier's ongoing security deposit balance requirements and flags any supplier falling into a deficiency status on that requirement. That spreadsheet is reviewed by the Manager of Treasury Services, who is responsible for ensuring that suppliers have posted adequate security. The Company indicated that it generally has not had any problems with supplier defaults or insufficient security postings.

Supplier nominations must be done using the Company's EBB. Billing and other data exchange may be done using text files, Excel files, or EDI. Six of the 13 active suppliers currently use EDI.

None of the suppliers take off-system sales or capacity releases from NJNG; rather, they procure their supplies and transportation to the NJNG city gates through other means.

The Residential Transportation Program

NJNG's first step toward residential retail competition occurred on April 1, 1997, when the Company implemented a pilot program intended to allow 30,000 customers to migrate to third-party suppliers, at a rate of 10,000 per year over a three-year period. The positive response from both customers and suppliers was such that, in January 1998, the Board removed the three-year requirement and allowed all 30,000 customers to migrate on a first-come, first-served basis, and added an additional 25,000 customers. With the 1999 EDECA legislation, retail competition was extended to all customers. NJNG continues to retain the supplier of last resort responsibility.

C. Conclusions

1. NJNG has been aggressive and creative in negotiating arrangements to supply transportation and sales service to electric generators.

Services to large customers with alternatives (*e.g.*, developers who may go elsewhere or build their own pipeline interconnections) present non-traditional opportunities for LDCs to acquire additional margin contribution than they would not otherwise get from traditional sales and transportation customers. Serving non-traditional customers requires non-traditional thinking. For many years, the Company has sought out and worked with developers to seek to provide sales or transportation services. As described previously in this section, NJNG has worked with developers to craft rate plans which meet their needs while providing a contribution which would otherwise not be available.

The Company has crafted individual plans for the unique needs of the individual units, recognizing their load characteristics and operating plans. Liberty has some concerns with the specific sharing formulas associated with the several of the generators, which are discussed in the Chapter of Liberty's Phase 2 Report, Incentive and Margin Sharing Programs.

2. NJNG has been supportive and supplier-friendly to the third-party supplier community.

NJNG presents clear and comprehensive information its supplier handbook, for both new suppliers exploring signing up, and for maintaining ongoing relationships and interactions. It offers a choice of three billing approaches, in which the supplier can, at its option, bill for both, neither, or only itself. Suppliers may exchange data with the Company though EDI, data files, or paper files, again at the suppliers' option.

3. Service reliability from third-party suppliers has been very good in NJNG's territory.

Above all, a successful third-party supplier program requires reliable suppliers. NJNG reported that it has not had any significant reliability problems with its suppliers over the audit period. Thus, while NJNG retains supplier of last responsibility, the combination of supplier licensing,

security deposits, credit checks, and close tracking of supplier performance has ensured that requirement is met without imposition of significant additional costs to the overall system.

4. The non-residential transportation market appears healthy, with 13 suppliers serving those customers.

As shown in the next table, 13 suppliers are certified to operate and active in the non-residential transportation market in NJNG's territory.

Active Suppliers in NJNG Service Territory

Suppliers (Alphabetically)	Classifications Served				
	CTB	SCR	IT	FT	RT
Econnergy	X	x			x
End Users	X				
Gasmark (UGI Energy)	X	x	x	x	
Great Eastern Energy	X				x
Hess Company	X	x	x	x	
Intelligent Energy	X	x			x
Metromedia	X			x	
Mitchell Supreme (NATGASCO)	X	x			x
Mx Energy	X	x	x		x
PEPCO Energy	X		x	x	
South Jersey Energy	X	x			
Sprague Energy	X		x	x	
Woodruff Energy	X		x	x	
Total Numbers of Suppliers	**13**	**7**	**6**	**6**	**5**

While the number of non-residential suppliers has dropped off significantly, as described in the discussion of the residential market which follows, the number of suppliers, and the mix of local, regional and national companies doing business in NJNG's territory today, still represents a relatively healthy competitive environment.

5. After an encouraging start, residential retail competition has gradually diminished. *(Recommendation #1)*

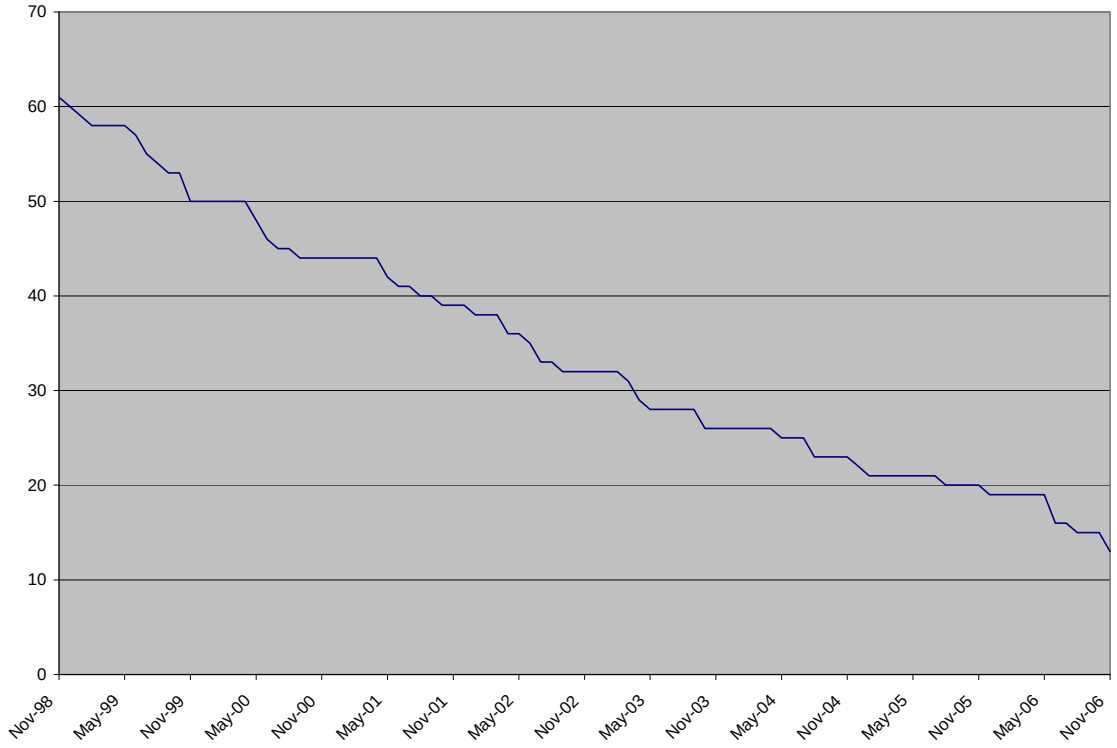
The number of suppliers and the specific supplier companies have not been constant over the audit period, which includes the inception, development and decline of the fully open market. The next table lists 48 suppliers who were formerly active on NJNG's system, and the dates they ceased activity on the system.

Former Suppliers on NJNG System during the Audit Period

Supplier	Date Ceased Serving	Supplier	Date Ceased Serving
AGF Gas Sales	Jul 1999	KBC Energy Services	Feb 1999
All Energy	Aug 2004	KeySpan Energy	Mar 2003
Allenergy Gas Marketing Co.	Dec 2005	LG&E Energy	Jun 2000
Allenergy New Jersey Co. LLC	Aug 2004	Louis Dreyfus Energy	Nov 1999
Castle Power	Jun 2006		
Colonial Energy Company	Aug 2005	NJR Natural Energy	Apr 2002
Columbia Energy Retail Corp.	May 2001	Norstar	Jan 1999
Columbia Energy	Jun 2002	North Atlantic Utility	Jan 2005
Com Energy Marketing Inc.	Nov 1999	NUI	Dec 2004
Commercial Gas Srvs Prima	Sept 2000	Pace Energy LLC	Aug 1999
Cooperative energy	Jul 2002	Perry Gas Company	Oct 2001
CPM/Chevron Gas Brkr	May 2000	PG&E	Jan 2002
Delmarva Power	May 2001	Power Choice	Recent – date unavailable
Direct Gas Service/TXU Energy	Oct 2003	PP&L Energy Plus Comp. LLC	Oct 2003
Duke Energy	Aug 2001	Promark	Jul 2002
East Coast Energy	Dec 1998	PSE&G	May 2000
Eastern Energy	Jun 2001	PSEG Energy Technologies	Jun 2006
Enerval LLC	Nov 1999	Reliant Energy	May 2003
Engage Energy	Sept 1999	Select Energy	Recent – date unavailable
Enron	Sept 2002	Texas-Ohio Gas	Apr 2003
ERI Services	Jul 1999	Total Gas & Electric	Jun 2006
Exelon	Apr 2002	Utilicorp Energy Solutions	Jun 2000
Florida P&L Energy Services	Jul 2000	**Total of Suppliers**	**48**
Houston Energy Services	Aug 2006		

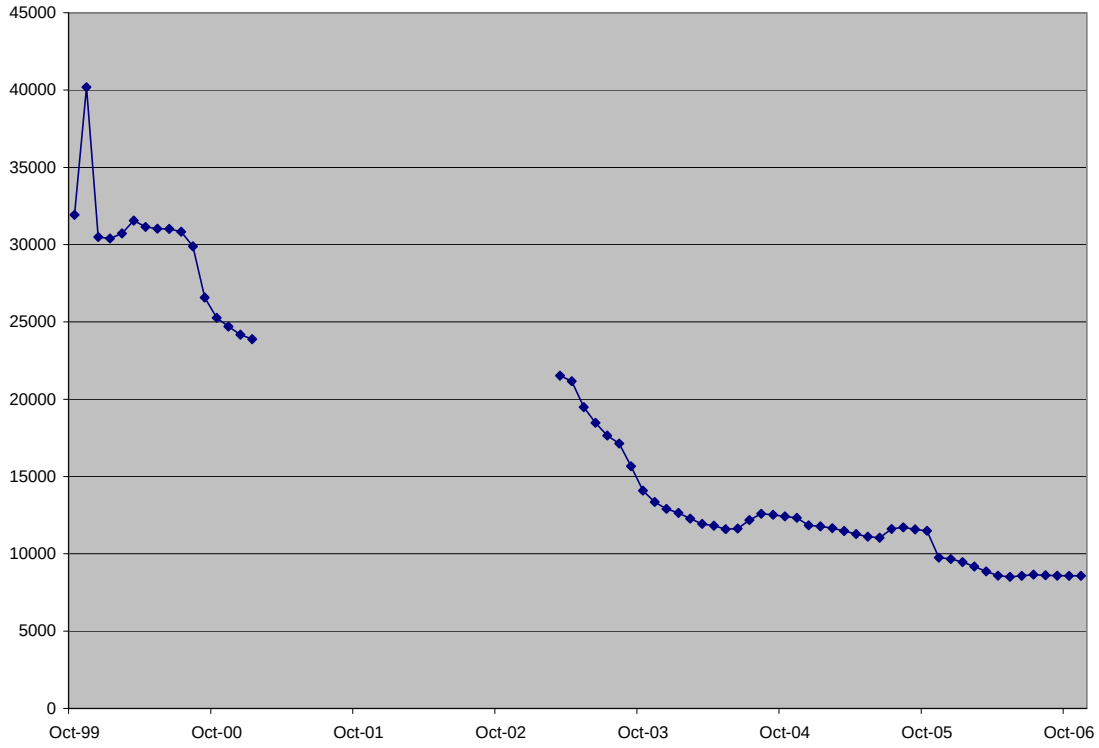
The decline in the number of suppliers over the audit period illustrates the initial optimism over the opening of markets to all customers, and the gradual retreat to a steady state in the non-residential markets and a minimal state in the residential markets. NJNG does not have the data readily available as to when each supplier came onto its system, but does know the month in which each supplier no longer on the system went off. If one assumes that they were all on the system at the start of the audit period, the following figure shows the decline in the number of suppliers.

Number of Suppliers on NJNG System vs. Time



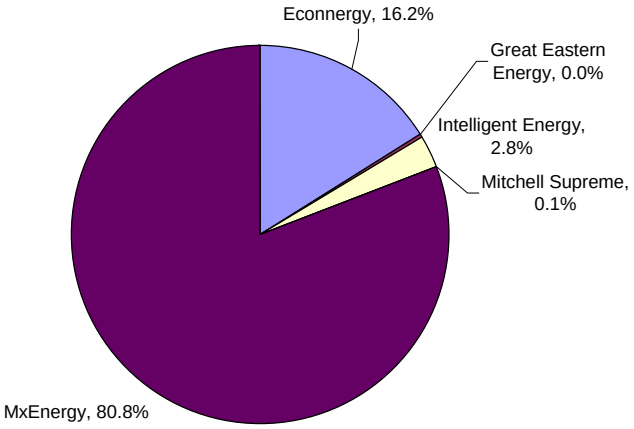
However, the initial high migration rates were not sustainable, and customers soon began a "reverse migration" back to NJNG. That downward trend has continued. The next figure shows the number of residential customers taking service from third-party suppliers over from October 1999 through October 2006.

Residential Transportation Customers
(Data unavailable or unreliable where not shown)



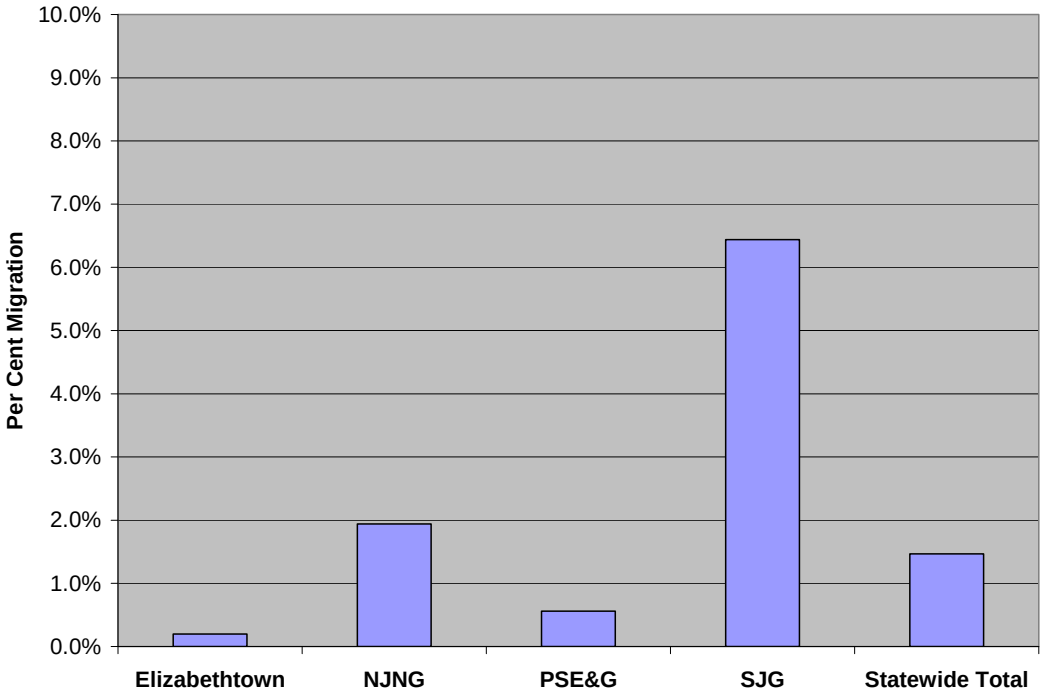
As discouraging as that trend is, it does not convey fully the decline in residential retail competition today. The next figure shows that, of the five residential suppliers nominally doing business on NJNG's system, only three have market share over one tenth of one per cent; one of those three has 80 percent of the market, all as of November 2006.

Residential Market Share

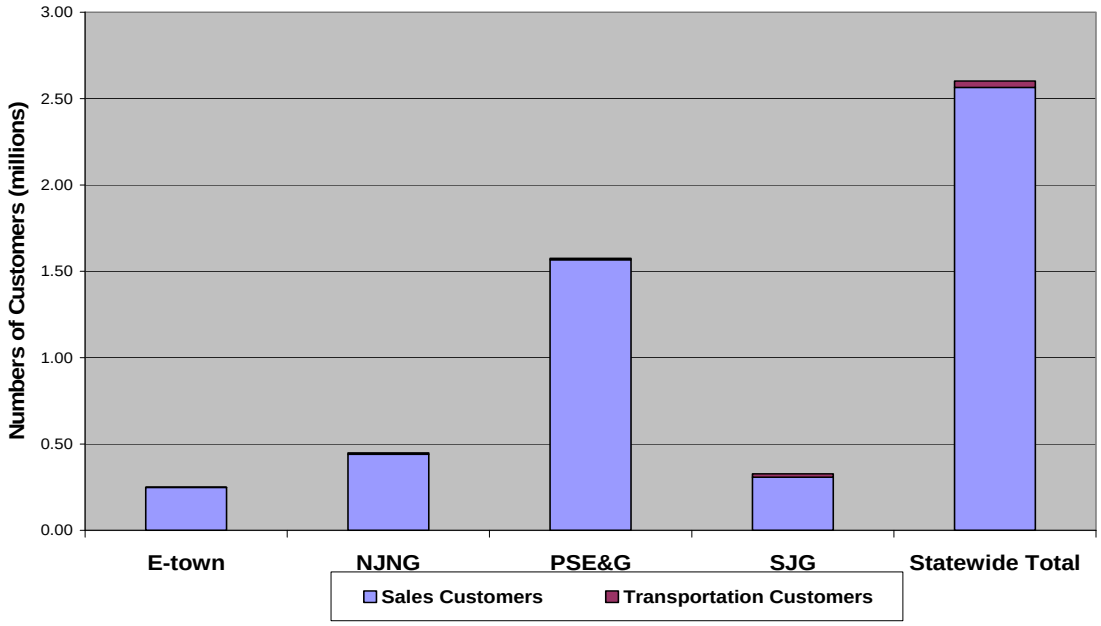


The state of residential retail competition is at NJNG is not appreciably different from the situation at the other New Jersey LDCs. The next figure shows that three of the four LDCs had at the end of 2006 total migrated customer rates of less than two per cent. The remaining LDC, South Jersey Gas Company, has a rate of approximately 6.5 percent, with a very substantial portion of that group is served by its affiliate, South Jersey Energy Company.

Comparison of Residential Migration Rates



Residential Customer Migration Totals Statewide



There is ample evidence that residential retail competition is not robust in NJNG's service territory. Consider that:

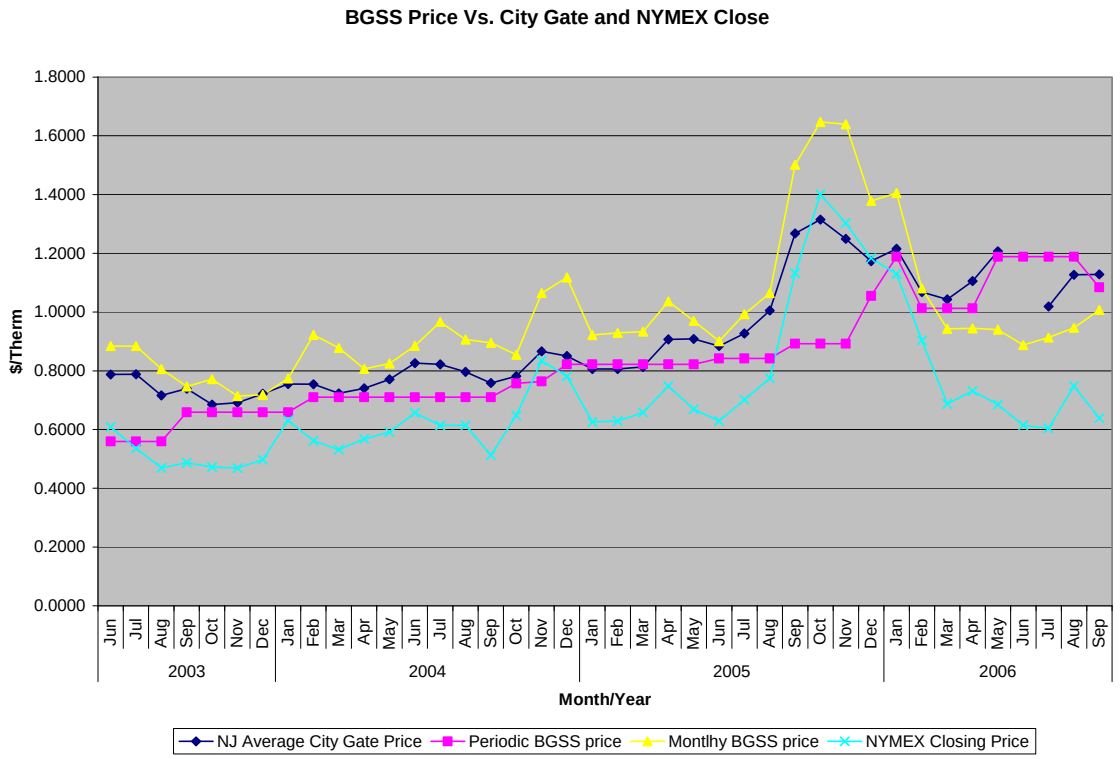
- At NJNG, the number of migrated customers has decreased from the 30,000 – 40,000 range near the beginning of the audit period to under 10,000 at the end of the period.
- As many as 60 suppliers were certified to do business on NJNG's system over the Audit period; that number is now 13.
- Only three suppliers are currently serving residential customers, and one has over 80 percent of that market.

Liberty believes that there are a variety of reasons for this decline, some indicative of the national situation, and some more localized:

- Only one state (Georgia) has mandated that LDCs get out of the merchant function, and only one company, Dominion East Ohio, has voluntarily submitted a plan to do so.
- States are proceeding independently, requiring suppliers to adapt to the unique parameters of each state's programs.
- The collapse of the wholesale energy industry, including bankruptcies, various criminal activities, false price reporting, and other actions removed arguably the largest driver of the residential competition movement.
- The nature of the utility business as currently structured is such that LDCs need to acquire medium- to long-term capacity and storage assets to ensure reliability for their customers, whom they are obligated to serve.
- Many proponents of retail competition expected wholesale and retail suppliers to make long-term capacity commitments. That has not happened. The nature of the supplier business is such that they only make short-term commitments.

- The regulated price of gas commodity, with gas adjustment clauses of one form or another in most jurisdictions, do not mirror market prices.

The next figure shows the behavior of four different gas price parameters over the period from mid-2003 to the end of the 2006 BGSS period.



The NYMEX closing price is essentially a month-ahead cash price – it represents the Henry Hub price at the end of the month (average of the last three business days' prices), and exhibits a high level of volatility.

The NJ Average City Gate price represents the average price paid by the New Jersey LDCs for gas delivered to their city gates for resale to their customers, including contract and spot gas. Because it includes the various BGSS pricing mechanisms employed by the LDCs, as well as the effects of their ending activities, it mitigates a substantial level of the NYMEX volatility. It is generally higher than the NJNG prices because of the much greater customer density in PSEG territory, which is further downstream from the Henry Hub and has higher transportation costs.

The Monthly BGSS price is the price charged by NJNG to sales customers who consume over 5,000 therms per year. For the most part, it reflects the same volatility as the NYMEX prices, with a one-month lag (for the gas prices to be reflected in bills) and at a higher level, representing the average cost of transportation from the Henry Hub to the city gates.

The Periodic BGSS rate is the average price charged by NJNG to residential and very small commercial customers, which includes the transportation component. As is readily evident, it has

a substantial mitigating effect on price volatility. It is also lower than the NJ Average price for the reasons stated previously.

The preceding figure illustrates two of the biggest difficulties in the retail competitive market. First, most suppliers signing customers seek to lock in their prices with financial instruments. Looking ahead to price behaviors such as illustrated in the figure, frequently suppliers cannot compete with the periodic BGSS rate. Further, the periodic BGSS rate mitigates price volatility to a significant extent. Many proponents of retail competition argue that should be the province of suppliers, and should not be offered by LDCs, as a way to encourage migration. While that is a decision that must be made by the BPU, it tends to keep customers with the LDC.

D. Recommendations

1. **Initiate a dialogue with the BPU regarding the NJNG vision, goals and objectives for competition in the retail residential market.** *(Conclusion #5)*

On the one hand, there is the reality of EDECA, with which the BPU and NJNG must comply. On the other hand, it has become clear that competition in the retail residential market as currently structured is not robust. The BGSS rate structure may contribute to that situation; however, there are other significant contributing factors. And, it is not at all clear that a "better" gas cost recovery mechanism can be designed to remedy the impacts that the BGSS methodology has on competition, or even if that were possible, that it would change anything.

It may be that the best course of action is to allow retail residential competition to "muddle along" and see what develops in New Jersey and nationally. However, that decision should not be made without a detailed examination of the policy and programs.

Liberty's recommendations addressing the sharing mechanisms related to the sale of gas to electric generators are included in the Chapter of Liberty's Phase 2 Report on Incentive and Margin Sharing Programs.

VIII. Hedging – NJNG's Strategy and Philosophy

A. Background

The Company's hedging activities began with its Financial Risk Management Program, proposed in 1994 as part of its Levelized Gas Adjustment Clause (LGAC) filing for the October 1, 1994 through September 30, 1995 recovery period. That program used call and put options in an effort to reduce the Company's supply costs. It set a dollar limit on the Company's expenditures for such options, which limits were to be reviewed by the BPU Staff and the Ratepayer Advocate after some period to evaluate how the program was working. As part of the Stipulation under which the Program was initiated, the Company agreed to establish a Financial Risk Management Committee of senior executives, to strictly limit the number of employees who could conduct transactions for the Program, and to monitor the transaction activities of those employees daily. The Company provided monthly reports on the results of the Program to the BPU and to the parties to its rate proceedings. The Program has been extended a number of times, and is currently scheduled to expire on October 31, 2007.

In 2001, in response to the dramatic run-up in gas prices that had occurred at the end of 2000 and early 2001, the BPU required all of the New Jersey LDCs to develop and submit comprehensive hedging programs. In its response, the Company reported that it had been using a variety of financial risk management tools and strategies to reduce its customers' exposure to unfavorable market conditions, including call options, call spreads and put options, as well as futures, swaps and fixed price physical deals. The Company reported that it also managed its storage inventory to control gas costs and minimize the effects of market volatility. The response also described briefly the activities of the Company's Risk Management Committee (RMC), and reported that the Company's strategy was to hedge at least 75 percent of the current winter's volumes, and at least 25 percent of the following April through March volumes, by November of each year. The percentage hedged was to consist of storage gas, all fixed-price contracts (futures contracts or physical), plus all call positions, divided by the Company's estimated purchase requirements, including fuel.

The Company's more-recent Storage Incentive Program (SIP) also has a hedging component. Under that Program, the Company sets an agreed-upon storage inventory cost benchmark established through natural gas futures prices applicable to the April-through-October injection season, plus projected transportation costs. The Company can then trade its hedges in response to changes in futures prices, and vary its injection schedules, in an effort to beat the benchmark. That Program was approved by the BPU in late 2003, and was extended last year through October 31, 2007.

Liberty examined both the planning and execution of the Company's hedging programs. Liberty submitted a number of data requests, interviewed key personnel, and followed up with additional data requests and telephone conferences, in which we asked Company personnel to clarify certain points. The Company also prepared exhibits in response to our requests.

The criteria that Liberty used to assess the Company's hedging programs were the following:

- There should be a specific Risk Management Policy that provides for adequate financial and management controls, levels of transaction authority and allowable types of strategies, techniques and transactions.
- There should be specific identification of allowed and prohibited types of transactions.
- Detailed approval requirements should exist for transactions above various dollar threshold levels.
- There should be specific authorization levels for employees engaged in trading activities.
- Routine evaluation of hedging program and activity success should take place.

B. Findings

1. Hedging Strategy and Philosophy

The overall objective of the Company's hedging program has always been price stability. The Company does not use quantitative measures of price stability, such as volatility targets; rather, it uses a combination of gas purchases, storage injections and withdrawals, and financial instruments "to minimize … the impact of unfavorable market conditions on its customers."[18]

The Company uses a variety of activities and techniques in pursuit of its objective. Included among those are the following:

- Optimization (physical):
  - Fixing winter gas price by purchasing in summer and injecting into storage
  - Adjusting storage injection and withdrawal schedules in response to changes in market prices
- Financial instruments:
  - Natural gas futures contracts (NYMEX)
  - Swaps
  - Options to buy or sell (both NYMEX and over–the-counter)
  - Fixed-price contracts.

Both physical and financial hedges can be "unwound", revised or reset in response to market conditions. The Company also enters "spread" transactions in both physicals and financials, in which one type of instrument is simultaneously bought and sold in pursuit of gains from the differences in value of the instrument at different times.

The Company's strategy for attainment of the objective is now the same as it was in 2001: by November 1 of each year, Company traders place physical and financial hedges to protect the price of at least 75 percent of that winter's estimated requirements, and at least 25 percent of the succeeding 12 months' requirements.

The next table shows the costs and benefits of the various types of hedges over the audit period. The table includes the cost of options bought as part of the FRM Program required by the BPU.

[18] Letter, dated June 1, 2001, from Kevin A. Moss, Senior Vice President, Regulatory Affairs, NJNG, to The Honorable Carol J. Murphy, Acting President, NJ Board of Public Utilities. Provided to Liberty in response to DR No. 623.

Hedging Costs and Benefits

Delivery Fiscal Year	Nymex Futures	Financially Settled Nymex Swaps	Financially Settled Put and Call Gain or (Loss)	All Nymex Put and Call Option Premiums	Fixed Forward Physical	Total Benefit (Cost)
2000	12,272,630	(65,650)	85,000	3,536,948	0	8,755,033
2001	17,477,950	(1,572,148)	0	(7,605,255)	0	8,300,548
2002	(17,342,180)	(1,128,225)	(8,356,240)	(3,788,050)	(14,300)	(30,628,995)
2003	$11,128,760	($24,403)	$11,764,775	$1,994,425	$0	$24,863,557
2004	$18,703,490	$150,717	($3,719,685)	($1,151,050)	$0	$13,983,473
2005	$27,494,870	$11,530,908	$2,534,500	($3,214,400)	$1,572,592	$39,918,469
2006	$75,958,160	($15,045,575)	($2,745,000)	($6,186,250)	$4,030,260	$56,011,595

Source: Responses to Data Requests No. 460, 801.

The table shows that NYMEX futures have been the largest source of benefit to the Company's commodity cost. Other instruments have provided considerable benefit in some years, but none have contributed with the magnitude and consistency of NYMEX futures.

The table also shows that hedging does not always reduce gas costs. In recent years, as gas prices have risen, the Company's hedging has had the effect of restraining the rise. As was the case in FY 2002, however, hedges also have a restraining effect when gas prices are falling.

2. Effects on the Cost of Gas

Table VIII-2, below, shows that hedging has sometimes increased the Company's weighted average cost of gas (WACOG), but has usually reduced it. Over the course of the audit period, the average benefit has been about 7 percent of each year's WACOG.

Effect of Hedging on WACOG

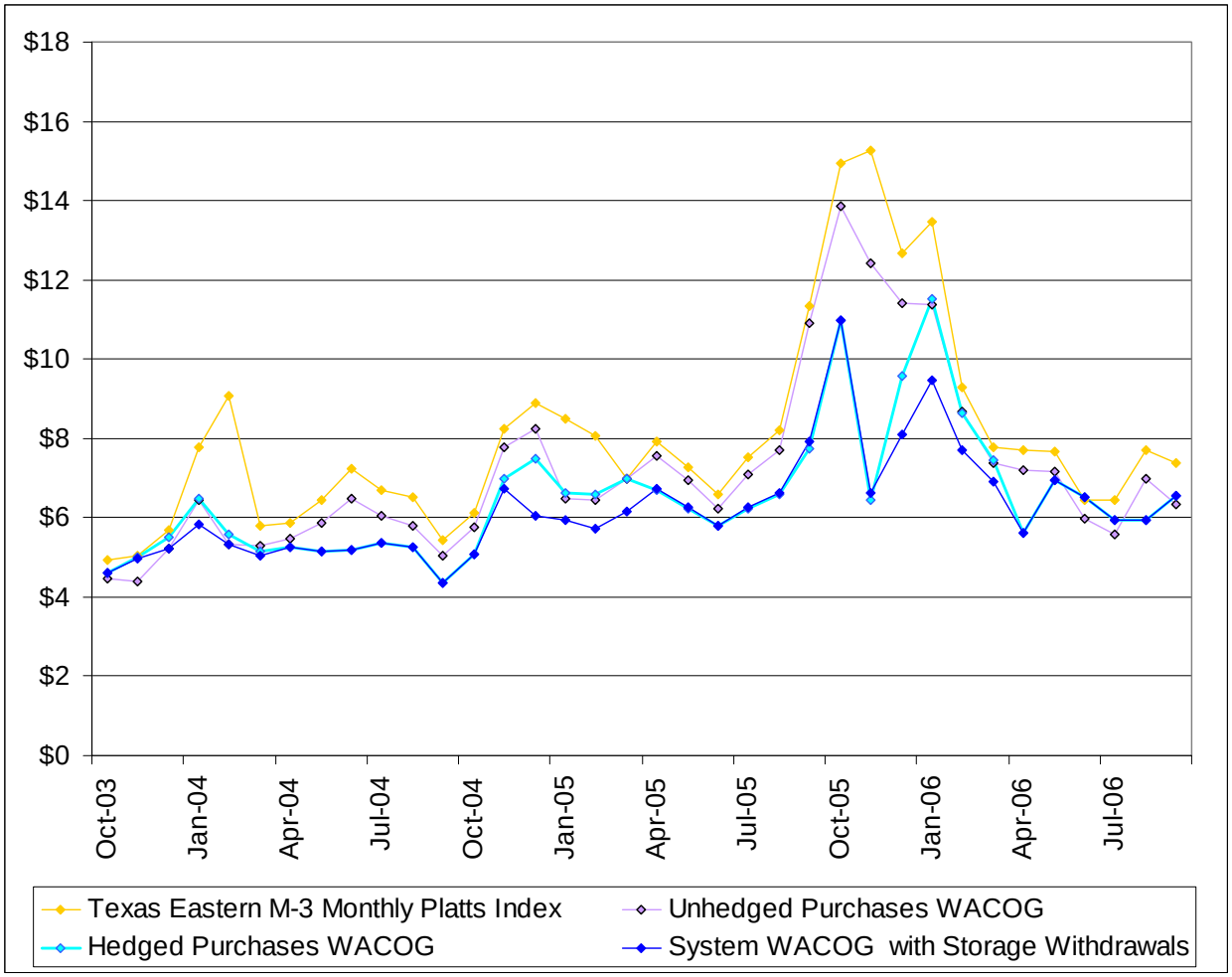
Fiscal Year	Periodic BGSS Sales(MM Dth)	Hedging (Cost)/Benefit ($MM)	(Cost)/Benefit per Unit ($/Dth)	WACOG ($/Dth)	(Cost)/Benefit as % of WACOG
2000	43.2	5.4	0.124	2.848	4.4
2001	51.0	8.3	0.163	4.696	3.5
2002	43.4	-30.6	-0.705	3.546	-19.9
2003	56.4	24.9	0.441	4.669	9.4
2004	54.2	14.0	0.258	5.129	5.0
2005	55.0	39.9	0.726	6.271	11.6
2006	43.3	56.0	1.293	7.273	17.8
Average			0.340	4.919	6.9

Sources: Responses to Data Request Nos. 331, 460, 801

The Company's full hedging program, including the effects of gas in storage, has had the effect of stabilizing its gas prices considerably relative to market prices. The chart below, Figure VIII-

1, plots components of the Company's WACOG against the monthly index price for Tetco M3, as reported by Platt's. The Tetco M3 index is an unhedged wholesale market price in the vicinity of the Company's city-gate delivery points, and is measured at a point that makes it comparable to the Company's WACOG.

Tetco M3 Price versus NJNG WACOG



The three lines on the chart illustrate the effect of physical and financial hedging on the Company's WACOG. The line marked *Unhedged Purchases WACOG* represents roughly what the Company's unit purchased-gas cost would be without either financial hedges or the influence of storage withdrawals. *Hedged Purchases WACOG* shows the influence of financial hedges, and *System WACOG with Storage Withdrawals* shows the effects of both financial hedges and storage withdrawals. None of those three metrics includes the fixed costs of gas storage and transportation, so none of them is precisely comparable to the M3 index. Making the three series precisely comparable to the M3 index would require reducing fixed transportation costs by the amounts of cost recovery through off-system sales and capacity release, and then dividing the result by annual quantities. That was not done in order to illustrate more clearly the influence of physical and financial hedges on market-price volatility. Clearly, the Company's hedging

activities have not eliminated variability in the Company's WACOG, but they have reduced it noticeably.

3. Risk Management Policy

The utility company and its wholesale marketing affiliate each have guidelines and procedures governing their respective risk-management activities. The subjects covered by the respective documents are as follows:

- Objectives of the Risk Management Committee's Guidelines and Procedures
- Operating guidelines for the Risk Management Committee
- Overview of NJNG's (NJRES's) business activities
- Business risks
- Required notifications
- Disciplinary actions for violations of the RMC's Risk Management Guidelines
- Risk monitoring and reporting responsibilities.

Each document attaches a list of approved financial instruments and exchanges, and a list of authorized traders. NJNG's document attaches a statement of the volume limitations for the approved Financial Risk Management Program. NJRES's attaches a detailed Credit and Contract Policy for Wholesale Transactions. That policy includes procedures for contract review (Part 1), and a statement of Credit Policy for Regulated (Tariff-based) and Unregulated (Non Tariff-based) wholesale transactions. (NJNG's document also addresses credit risk, but in a more abbreviated fashion.) Each document specifies authority limits, and trading and exchange position guidelines, to limit the respective companies' exposure to the risks of adverse changes in market prices. A number of program risks are identified in each document, and responsibilities are assigned for limiting the respective companies' exposure to each risk.

While the basic elements of these policies have been in place essentially since hedging began at NJNG, some aspects of implementation have lagged. The Risk Management Committee meets twice monthly, and monitors closely the Company's hedge positions and performance with respect to the various incentive programs. Credit limits are also monitored carefully. Reporting to the Risk Management Committee is independent of the trading function, but operational policies and procedures applying to the trading function are lacking. NJNG reports that the following procedures are "works in progress":

- Financial deal entry, position tracking and reporting from the Zai*Net risk management system and the gas management system (GMS)
- BGSS hedging parameters
- Descriptions of approved derivatives and strategies
- Descriptions of incentive guidelines and reports
- Descriptions of all risk-management reports and where the information comes from
- Descriptions of all BGSS planning reports and where the information comes from
- Procedures and parameters for transacting on NYMEX and ICE.

Efforts to comply with the requirements of Sarbanes-Oxley regulations is producing some of the missing procedures, but Energy Services personnel concede that there is considerable work remaining to be done in this area.

An important consequence of this lack of full implementation is that auditing of activities in this area is limited. The two companies' Risk Management Guidelines provide for "periodic non-scheduled audits", but few are performed. The lack of established procedures affects the ability of auditors to understand the functions well enough to know what to examine.

The Company's transaction-tracking systems, GMS for physical transactions and Zai*Net for financial transactions, are reasonably secure. The Company reports that it has an employee who checks confirmations for physical transactions, and a separate employee who checks brokerage statements for financial positions.[19] Liberty's questions concern the accuracy of the data that enters the transaction-tracking systems, and use of reports generated by the systems. Liberty does not question the integrity of the individuals operating the systems; rather, the lack of audits limits the Company's ability to check for mistakes.

While procedures in these areas are lacking, the Company does take care to segregate the trading and hedging activities of the utility from those of the affiliate. NJNG and NJRES utilize different futures clearing merchants (FCMs) for trading financial instruments, so as not to confuse the two companies' positions.

4. Operation

The Company's hedging program runs on a rolling two-year cycle that begins on April 1 of each year. By that date each year, Company traders develop plans to attain the target hedged quantities by the following November 1. Thus, by April 1, 2007 (for example), the traders would have developed a plan to hedge 75 percent of the Company's estimated requirements for system-supply gas for the winter of 2007/2008 by November 1, 2007.

The plan would involve both injections of gas into storage (a physical hedge), and the purchase of various financial instruments. Injection of gas into storage acts as a hedge against price changes because the price of the gas is fixed when it is injected. The function of the financial instruments is to fix a price through a futures contract, for example, or to limit the possible change in a price through an option or a swap transaction. Components of the plan – rates of storage injection, for example, plus types and quantities of financial hedges – would be based on the trader's analysis of market conditions, and his selection of a particular hedging strategy.

Also by April 1 (2007 in this example), the traders would have developed a plan for hedging at least 25 percent of the Company's estimated requirements for the succeeding 12 months (April 1, 2008 through March 31, 2009). That plan also would be designed to result in attainment of the target hedge level by November 1 (2007). Hedged quantities can be higher than the target levels by November 1 if the traders think market conditions warrant, but they should not be lower.

Once in place, hedges can be further traded ("optimized"), or the hedging plan can be adjusted, if the Company's traders believe that doing so would improve the Company's position. Storage-

[19] Sometimes these functions are reported as being the responsibility of the *middle office*, but other times they are reported to be conducted by the *back office*. See, *e.g.*, the Company's response to DR No. 67d. The term "back office" was a generic term used to indicate functions separate from the trading function. In fact, both reconciliations are performed by middle office personnel.

injection schedules can be adjusted, for example, and financial instruments can be bought and sold, as market conditions change.

Hedging activities are coordinated with the physical activities that take place in order to provide supply to customers. The Company's physical and financial traders attend the seasonal planning meetings, to ensure that hedging plans are coordinated with supply plans. Planning and execution on both physical and financial sides are updated at monthly meetings, prior to the beginning of each month, and at daily meetings, at which actions and plans for the next few days are "fine-tuned" in response to load conditions and market conditions.

As mentioned in the chapter on commodity purchasing, a considerable portion of each month's physical purchases of gas are hedged with futures contracts. Those contracts are bought some months in advance of the requirement for the gas, and are bought to fix its price. With the approach of the month in which the physical gas is required, the futures contract is liquidated and physical gas is bought. As those two trades occur at the same time, their prices cancel each other (a buy and a sell of the same quantity at the same price), and the original price of the futures contract becomes the price of the physical gas used to serve customers.

5. Controls

NJNG and NJRES each have Risk Management Guidelines. Those documents provide the policy framework for conduct of each company's energy trading and hedging activities. NJNG's Guidelines designate NJNG's Controller as primarily responsible for monitoring and reporting on NJNG's adherence to established procedures and trading limits.

A single Risk Management Committee meets at least twice per month to receive and discuss reports from both companies. The Risk Management Committee is composed of NJR's Senior Vice President and CFO, NJR Service Corporation's Senior Vice President and Treasurer, NJNG's[20] Senior Vice President of Energy Services, and NJNG's Vice President of Regulatory Affairs. The Manager, Financial Control, who reports to an officer outside of the trading function, is responsible for reviewing NJNG's reports to the Risk Management Committee. Those reports address the following subjects:

- NJNG hedging summary
- NJNG Storage Incentive summary
- NJNG forward market equity
- NJNG FRM Program
- NJNG FRM Supplemental
- Credit information change report
- Available credit report
- Credit exposure
- Credit watchlist.
- Value at Risk

[20] One individual holds this office at both companies.

One trader is primarily responsible for the utility's physical purchases. Trades on the electronic exchange (Intercontinental Exchange, or ICE) are captured instantaneously in the Company's GMS. Trades agreed by phone or instant message must be entered into the system manually, but access to the system is controlled.

Another individual is primarily responsible for the utility's trades in financial instruments. There is a computerized deal-capture system (Zai*Net) for those trades, as well as the physical ones. Financial swaps are entered in GMS and uploaded to Zai*Net.)Trades must be entered manually, but the system is access-restricted, with each user assigned a password. The utility and its affiliate use the same deal-capture system, but work off of different data bases within the system. The two affiliates also use different financial clearing merchants (FCMs), so that trades are not inadvertently assigned to the wrong account.

Physical trades are reconciled with counterparties' confirmations each day by the Manager, Financial Control. That individual also confirms financial trades and reconciles open mark-to-market exchange-traded positions to broker statements daily.

C. Conclusions

1. NJNG's Risk Management Guidelines are incomplete. *(Recommendation #1)*

The Company's Guidelines and Procedures document covers some of the areas that it should, but not all of them. It covers levels of transaction authority, detailed approval requirements for larger transactions and specific authorization for employees engaged in trading activities. It does not cover financial and management controls which are handled by, respectively, Treasury and the reports provided at the bi-monthly Risk Management meetings. The types of financial instruments that may be used and allowable types of strategies, techniques and transactions are covered in the Risk Management Guidelines. Importantly, it also says nothing about whether or how NJNG should deal with NJRES.

The document is entitled Guidelines and Procedures, but it is primarily a statement of policy. As discussed in more detail in Conclusion 2, procedures generally do not exist.

2. Procedures implementing such policies as exist are generally non-existent. *(Recommendation #1)*

As noted in the Findings section, documented operational procedures are lacking in virtually all[21] areas of the Company's energy trading and hedging activities. Company personnel note that those activities are carried out by individuals who have been doing those jobs for a considerable period of time, and those individuals "know what to do".

This response exhibits a failure to conform to good practice at a basic level. Proper controls would have the procedures developed by someone <u>other than</u> the person doing the job now, in order that the procedures reflect proper concern for controls and testing. In Liberty's experience, controls and audit procedures are most often developed by the "middle office", in order that they

[21] The sole exception is Credit and Contracts, for which detailed procedures have been developed and attached to NJRES's Risk Management Guidelines.

reflect the proper concern for identifying, measuring and monitoring the risks that the Company faces in conducting trading and hedging activities.

3. Performance analysis of NJNG's hedging program is not done. *(Recommendation #2)*

The affiliate does some analysis of its exposure to market risks, but the utility does no analysis of the performance of its hedging program. Regarding the value-at-risk metric, for example, the Company's attitude is that the utility has no value at risk, since all hedge positions will be flowed through its BGSS mechanism, irrespective of what happens to the market or to the value of the hedge positions. The Value at Risk of NJNG hedges is produced for and reviewed at every Risk Management Committee ("RMC") meeting.

Hedging percentages are reviewed at every RMC meeting in light of the overall objective of price stability. NJNG's success can be measured by the BGSS prices for customers over the period covered in this audit. Best practices for utility companies today involve calculation of metrics such as expected annual fuel costs, maximum expected annual fuel costs and fuel cost stability risk. These metrics are used to evaluate alternative hedging strategies, and then to make adjustments as necessary.

D. Recommendations

1. Update Risk Management Guidelines and Procedures document as soon as possible. *(Conclusion #1)*

The Company advised us that the Guidelines and Procedures document is continuously being updated. The version provided to us in response to our data request was signed by the Company CFO and the Senior Vice President of Energy Services on July 8, 2005. On the basis of our review of similar documents prepared for other companies, we believe that the document is some years out of date in both scope and content. Liberty strongly recommends that the Company engage outside experts in the area of Risk Management Operation to bring the Risk Management Guidelines and other procedures into conformance with standard industry practice.

2. Evaluate the performance of alternative hedging strategies. *(Conclusion #4)*

Performance metrics, such as expected annual fuel costs, maximum expected annual fuel costs and fuel-cost stability risk, should be part of the utility's discussions with its stakeholders and the BPU regarding performance of the Company's current trading strategies, and possible alternative strategies. The Company must bring its efforts in this area up to date in time for its June 2008 BGSS filing.

IX. MGP Remediation

A. Background

The New Jersey Department of Environmental Protection (NJ DEP) has made the identification and assessment of MGP sites a priority since the early 1980s. Site identification and establishing ownership occurred through the mid-1980s, and assessment occurred through the 1990s. Assessment required an extended period, as most of the sites were still owned by utility companies, and most were still in use for various aspects of utility operations. Those operations had to be moved to other locations before assessments could be completed and remediation begun.

The Company's SEC Form 10-K reports that NJNG identified 11 former manufactured gas plant (MGP) sites contaminated with residues from operation of those plants. NJNG shared responsibility for 10 of those sites with its former parent, Jersey Central Power & Light Company (JCP&L). In September 2000, NJNG and JC&L divided responsibility for the 10 sites, with NJNG taking two, the Long Branch and Toms River sites, and JCP&L taking the remaining eight.

The 11th site, Atlantic Highlands, responsibility for which JCP&L does not share, was owned and operated by County Gas Company, a predecessor company to NJNG. NJNG also has responsibility for an additional site, the Manchester site, as a result of litigation. NJNG engaged an asphalt contractor to remove and recycle some of the MGP residues from the Long Branch and Atlantic Highlands sites. State authorities later determined that some of the transported residues consisted of hazardous waste. The contractor ceased work and sued NJNG. As a result of that litigation, NJNG became responsible for remediation at the location where the contractor took the material.

The SEC Form 10-K also reports that, in September 2006, the Company, with the assistance of an outside consulting firm, updated an environmental review of its MGP sites. Based on that review, NJNG estimated that total future expenditures, exclusive of any insurance recoveries, will range from $105.4 million to $174.6 million.

Liberty examined the sufficiency of NJNG's processes for identifying sites and other potentially responsible parties. We also examined its overall remediation approach and strategy, and reviewed insurance issues, examining issues such as whether:

- NJNG has conducted a disciplined review of its insurance coverages.
- NJNG has accessed outside expertise as necessary to pursue adequate recovery
- NJNG has applied a reasonable basis for accepting any settlements.

Development and administration of the remediation program can also be quite tedious and time-consuming, as stakeholders and affected parties' interests are rarely coincident. Months- or even years-long negotiations often characterize a company's remediation efforts. Because of these characteristics, organizing and staffing an effective remediation program is often the most

difficult aspect. Programs can be plagued by high staff turnover, bad morale and poor-quality staff.

The solution to these challenges is usually to increase the visibility of the program within the company. The best programs report to a senior officer of the company, either the president or a senior vice president, and are staffed by highly-qualified and well-compensated personnel. Program direction and focus are generally essential to cost-effectiveness; thus, continuity in key staff and officer responsibility are also usually present in effective programs.

Liberty inquired about the organization and staffing of the Company's program in reviewing the whether NJNG has staffed the remediation program with capable, qualified personnel, with appropriate training and experience and whether the remediation program reports to a senior officer.

MGP remediation normally proceeds through a well-defined sequence of investigation and testing, stakeholder consultations and negotiation, and then program execution. Effective program management requires disciplined cost control and cost analysis at every stage. Stakeholder consultations and negotiations usually involve careful development and costing of alternatives. Maintaining the confidence of stakeholders, including responsible government authorities, then requires disciplined execution of agreed actions.

Liberty inquired about the Company's program control and record-keeping in order to determine whether:

- The Company's systems and processes for expense capture and recording are well-designed and accurately implemented.
- The Company routinely compares actual expenditures at each site with planned, and promptly analyze any variances.
- Document storage and retrieval are organized and operated effectively.

The chemical compounds of concern in MGP remediation have been classified as "potential environmental problems" under the criteria established in the Federal Comprehensive Environmental Response, Compensation, and Liability Act ("CERCLA"), commonly known as "the Superfund law". That law gives the Federal government the authority to clean up hazardous waste sites if necessary, and to bill those it identifies as responsible parties for the costs of the clean-up.

New Jersey has been a leader in pressing for remediation of chemical contamination; the Federal government has not been as intrusive as might otherwise be the case. The effect of driving responsibility to the state level is avoidance of potentially extensive additional cost generally associated with Federal involvement, while at the same time promotion of effective and prompt clean-up.

Maintaining State control over the remediation process has required careful management of the relationship, however, and steady progress toward resolution of contamination problems. As

noted earlier, NJNG has been operating under Administrative Consent Orders with the NJDEP since September and October 1989 for two of its sites, and since late 1991 for the third.[22]

Liberty examined the effectiveness of company interaction with government authorities by reviewing:

- Completeness of its files for correspondence with the NJDEP and other government stakeholders.
- Reflection in correspondence between NJNG and the various involved government entities of reflect steady progress through the steps necessary to resolve its liabilities for MGP contamination.
- Relationships with various government entities, especially the NJDEP to assess agency confidence in NJNG's ability and willingness to accomplish the necessary steps in the remediation process.

B. Findings

1. Sites and Responsible Parties

NJNG made the site-responsibility division agreement with JCP&L in September 2000. The Company has been conducting remediation at sites, Atlantic Highlands, Long Branch and Toms River, pursuant to Administrative Consent Orders (ACOs) with the NJ DEP having dates of: September of 1989 for Toms River, October 1989 for Atlantic Highlands, and November 1991 for Long Branch. Responsibility for the Manchester site arose more recently, in 2002. The hazardous material has recently been removed from that site, however, and investigation of ground water impacts is about to begin. The Company believes that it has no cause to expect that there are any additional MGP liabilities remaining aside from those currently identified.

The Company's strategy has been to deal aggressively with its MGP responsibilities. NJNG has conducted an aggressive program of assessment and negotiation with the NJ DEP over the scope of the Company's responsibility. Issues tend to be about sources of other hazardous materials found at the MGP sites; Liberty found ample evidence that the company does what it can to limit its (and its customers') liability exposure to contaminants for which it is not clearly responsible.

The Company has sought to find other potentially responsible parties (PRPs) to assist with remediation efforts. The search for other PRPs led the Company to initiate litigation against Kaiser-Nelson Steel and Salvage Company (Kaiser-Nelson) and its successors. Kaiser-Nelson dismantled gas holders at MGP sites during the 1970s. Kaiser-Nelson was added as a defendant to litigation initiated by the Company in 1995 against its insurance providers.

The Company reports that the subject of other PRPs is discussed often with the NJDEP, usually in the context of identifying sources of contaminants thought not to be derived from MGP operations. The Company also reports that it must discharge a burden of proof in these cases in

[22] The landowner at the Manchester site is responsible to the NJ DEP for clean-up of contamination at that site. Due to the outcome of the litigation and subsequent settlement, NJNG is responsible to the landowner for the clean-up. Thus, NJNG has no special agreement with the NJ DEP regarding that site.

order to be absolved of any responsibility, and that the NJ DEP is usually reluctant to exchange the certainty that NJNG will perform for the prospect that someone less able or willing to perform might actually be more responsible.

2. Remediation Costs

The next table shows the amounts of remediation expenditures (excluding allowed interest and certain legal costs for the Long Branch site) since the prior audit.

Remediation Expenditures

Fiscal Year	*Dollars*
1997	$2,909,948
1998	$1,261,769
1999	$6,634,717
2000	$26,249,309
2001	$15,144,919
2002	$23,363,071
2003	$21,322,188
2004	$15,330,249
2005	$10,096,838

The Company retains an outside consulting firm to prepare estimates of the costs of its remediation program. The current firm has prepared for each site computer models that permit periodic revision and update to the various cost factors as the Company makes progress in its remediation efforts, and as more information about site conditions becomes know. The next table presents the consulting firm's September 2006 estimate. The estimate divides costs into past costs, past costs net of insurance recovery, expected future costs, and total estimated costs.

Past Costs and Expected Value of Future Costs
($ millions)
(Awaiting Response from Company)

Liberty found NJNG remediation expenditures to be considerably higher than what it has seen before. NJNG cited several causative factors:

- New Jersey location: the position that the NJ DEP has taken generally in these matters and the receptiveness of the court system to complaints about pollution-related consequences
- Criteria for remediation: NJNG's sites are mostly required to be treated to attain a "no-restriction" designation (meaning that, upon completion of remediation, there is no restriction on future use of the property)
- Physical characteristics of the sites: location on unconsolidated sediments means pollutants tend not to be confined to a limited area
- Areal extent of contamination: groundwater contamination that results from movement through unconsolidated sediments enlarges affected areas, often by as much as a factor of ten

- The existence of a "deep pockets" responsible party: stakeholders consider NJNG to be financially and technically capable of superior remediation results, and press for it to do so.

3. Company Pursuit of Insurance Recovery

The Company's SEC Form 10-K also reports that, in March, 1995, the Company instituted an action for declaratory relief against 24 separate insurance companies. These insurers had provided comprehensive general liability coverage to the Company from 1951 through 1985. In July, 1996, the Company amended its complaint to include the insurers for Kaiser-Nelson Steel and Salvage Company (mentioned above as the other PRP that the Company had identified in the course of its research regarding the sites and their operation). In September 2001, the Company reached a settlement with the insurer (the St. Paul Companies) that had provided the majority of the Company's coverages. That settlement involved a significant cash payment that was received in four installments, ending in October 2004. The Company also reached a settlement with Kaiser-Nelson's insurer in January 2006. That settlement also produced for NJNG a cash payment, which the Company credited to its remediation rider.

At the same time that the Company was negotiating its division of responsibility with JCP&L, it was also working on going-forward insurance coverages for its remediation activities. In September, 2000, the Company purchased two types of coverages from the Kemper Companies:

- A 20-year cost-containment insurance policy
- An Environmental Response Compensation and Liability Insurance Policy (ERCLIP).

NJNG requested that Kemper defend it under these coverages against Long Branch site litigation initiated in July 2003. Although Kemper acknowledged its duty to defend and indemnify NJNG in the Long Branch site litigation, thereafter it refused to fulfill its obligations. Consequently, NJNG filed suit against Kemper in New Jersey. Kemper had ceased its underwriting activities in 2003, and had commenced a voluntary runoff of its business.

NJNG undertook the typical and expected activities to identify and pursue its initial coverages as part of its remediation assessment phase during the 1990s. NJNG settled most of the resulting litigation in September 2001. The settlement provided NJNG with $32-33 million, which it credited to the rate-recovery mechanism for its remediation expenses; *i.e.*, the Remediation Adjustment in its Societal Benefits Clause. In January 2006, the company settled with Kaiser-Nelson's insurer, resulting in a payment of about $1 million, which was also credited to the "remediation rider".

The going-forward insurance coverages were worked out at the same time as the agreement with JCP&L regarding division of responsibility for the jointly-owned sites. NJNG bought insurance for the two sites for which it accepted responsibility. The Company reports that availability of that coverage was a factor in its acceptance of responsibility for those two sites. The Company has considered seeking coverage for the Atlantic Highlands site (the site for which it was solely responsible), but not enough was known about conditions at that site to provide enough certainty to make possible coverage at a value deemed worth the cost.

NJNG reported that selection of Kemper was done by obtaining quotes from an insurance broker. The solicitation included other carriers; however, according to NJNG's broker, Kemper offered the best value. Kemper's went into run-off after it had been selected for the coverages by NJNG and its broker, and, as reported in NJR's SEC Form 10-K, the Company had to sue Kemper to obtain the coverage for which it had paid. That litigation has recently been settled, and the Company received $12.8 million as part of that settlement.

4. Outside Expertise

The Company has master service agreements with consulting engineering firms to assist with management of each site. It also retains economic consultants to model the variables that affect its liability. Additional experts are retained to support litigation.

In the event of litigation, the Company usually retains outside counsel to conduct the litigation. If experts are required for support of the litigation, the Company usually allows its outside counsel to make recommendations. Counsel recommendations are put through the Company's normal procurement process, and are retained by the Company if Company procurement personnel are satisfied with the consultant's cost and qualifications. In some instances, experts are retained directly by outside counsel to ensure that any and all privileged communications are protected.

5. Litigation Settlements

The amounts produced by the various settlements appear to fall within a reasonable range. The Long Branch litigation initiated in July 2003 involved claims that include personal injury. A feature of the Company's remediation rider is that punitive and personal injury damages are not recoverable through that mechanism. A confidential settlement of the Long Branch litigation, including most of the personal injury claims, was reached in December 2005.

Manchester Litigation

A vendor who provided services in connection with clean-up of the Long Branch site sued after it was discovered that materials it transported from the site for the Company turned out to be declared hazardous. Previously, the New Jersey DEP has approved the use of the materials for road purposes, but that position was reversed. The vendor sued on a variety of counts. The lawyer handling Sealtite had been successful in securing the dismissal of all but misrepresentation claims. There had been prior to the trial no reports from the General Counsel's office to suggest that there was major concern about the defense's prospect at trial on the remaining allegations. Neither had there been any expression of concern about the performance of the attorney handling the case.

A recent review of this case conducted to assess its impact on potentially related litigation determined that the pre-trial depositions did not suggest likelihood that testimony from DEP personnel would cause significant problems for the defense. Questioning at trial, however, elicited responses from such personnel that helped the plaintiff's case.

The jury ultimately found that, in 1979, a consultant, acting as agent for the Company, deliberately concealed material facts from the DEP and that the DEP relied upon them. It found the Company liable. Before the determination of damages, the Company settled with the plaintiff

for approximately $7 million. The plaintiff had presented an expert's report identifying damages of approximately $44 million. Before trial, the plaintiff discussed settlement in this value range, and, according to Company representatives, was not willing to discuss an amount significantly lower.

Kemper Litigation

The Company had two forms of coverage from Kemper for the Long Branch site: $20 million for cleanup (the "cost cap" policy) and $20 million for third party claims (the "RCLIP" policy). Kemper rejected all claims submitted by NJNG under these policies. The Company brought suit. That litigation has now also been settled. The Company informed us that it plans to present both settlements, for the Long Branch litigation and for the Kemper litigation, to interested parties in its rate proceedings for consideration in its next filing for its remediation rider.

The Kemper complaint was filed in mid-2004, at about the same time as Kemper entered what is known as "run-off" status. Insurance companies in this status discontinue writing new policies, and seek to manage their assets in a way that will allow them to make payments on as many claims as possible. This procedure allows for an orderly liquidation of an insurance company. NJNG understood that this Kemper status put time pressure on the resolution of the claim, because the passage of time would increase the risk that remaining assets would prove to be insufficient to pay remaining claims. Without new revenue sources, assets would continue to dwindle as additional claims were settled. NJNG's anticipation has been that litigation of the type it brought would ordinarily take as much as two or three years, absent settlement, to reach resolution in the New Jersey courts.

NJNG found Kemper unresponsive to attempts in early 2006 to seek a settlement. Kemper made only a nominal offer against the total coverage of $40 million under the two policies: $20 million for cleanup (the "cost cap" policy) and $20 million for third party claims (the "ERCLIP" policy). NJNG also found itself having to press for movement in the litigation routinely, believing that Kemper had, under its financial circumstances, no incentive to make a truly compensatory settlement.

NJNG has understood that Kemper would not likely be in a position to pay off all of its claims from remaining assets. However, the nature of the run-off process has made it difficult for NJNG to gain access to detailed information that would allow it to gauge its claim against all others and against available Kemper assets. The Kemper run-off process was originally expected to run through late 2006; NJNG more recently came to understand that it would last at least through January 2007. NJNG achieved a settlement of $12.8 million in January 2007. This settlement exceeded the reserve that the Company believes the insurer had booked for the claim. The company believes that a meaningful settlement could not have come earlier. At this time, discovery had been completed, and a trial date had been set. NJNG had filed a comprehensive motion for summary judgment, which laid out for Kemper very clearly the case it was facing.

There was a potentially troublesome aspect to NJNG's case. The cost cap policy required NJNG to absorb the first $32 million from its own resources, after which Kemper would be responsible for the next $20 million. NJNG set this retention amount on the basis of recovery it would receive from other insurers on other policies, which means that none of that $32 million would

come from "internal" NJNG resources. Kemper was arguing that the $32 million could not be satisfied from insurance proceeds. If its argument were to be accepted, the $20 million cost cap coverage would have little or no value to NJNG, given likely expenditures on third-party claims. NJNG believed that it had a reasonably strong counter to this Kemper argument, but nevertheless did consider it a litigation risk.

Outside Legal Costs

Liberty has reviewed the bills of the law firms that represented the company in litigation. They do not isolate costs associated with personal injury versus property damage and remediation. There was an effort to produce a segregation of Long Branch settlement amounts by type of damage. That classification, however, shows no basis for making the segregation and NJNG reports that it has no knowledge of how the preparer determined the splits that the document shows.

6. Program Organization and Staffing

NJNG conducts remediation activities through a relatively small internal staff that it supplements with contractors and expert consultants. The Director and two remediation engineers provide technical direction for the program. The program also has dedicated people in the Purchasing area of NJR Services Company, and in Public Affairs. Program records are maintained by a coordinator, who works for the Director.

Contractors provide much of the resources for conducting field activities. NJNG maintains master services agreements with consulting engineering firms, who provide a variety of services. One of the firms has primary responsibility at each site. That firm would have been selected at the beginning of field work at that site, and will continue with task design and engineering work through to completion of work at that site.

The Company has set up community advisory panels for each site. The purpose of these panels is to disseminate information about activities at each site, to receive community input to the conduct of the programs, and to discuss any areas of concern. These panels meet about every other month (more often if necessary), and meetings are attended by Company Public Affairs staff and the Project Manager for that site. The NJ DEP is invited to send a representative, as are the BPU, the New Jersey Department of Health and Senior Services and the Agency for Toxic Substances and Disease Registry. Meetings are convened and moderated by a third-party facilitator paid for by NJNG.

All program personnel are well qualified and quite capable. The Director of the program came from a large specialty chemicals manufacturing company, where he was responsible for environmental remediation, safety and risk-management programs world-wide. Other technical and administrative personnel are similarly well qualified.

The Director reports to the Company's Senior Vice President for Corporate Affairs and Marketing. He provides directly to the Board of Directors program progress reports at least annually. He provided a comprehensive presentation to the Board regarding the program in March 2004, and provides one-on-one orientations about the program to each new Board

member when they join. Major budget commitments are examined by IAD and approved personally by the President of the Company.

7. Documentation and Control

The Company's MGP procurement procedures provide a highly-structured process for budgeting, contracting, authorization for expenditure, cost-tracking and invoice reconciliation. The challenge that those procedures address is that unanticipated or changed field conditions may impose needs to modify work schedules, cost estimates, cash flow, budget allocations and spending authorizations.

The MGP procurement procedures accommodate those needs through careful cost estimation, and then intensive cost tracking. Each year's budgeted expenditures are itemized into cost categories at each site. Costs are categorized by the nature of the activity and the identity of the party doing the work; *e.g.*, remediation contractor, surveyor, laboratory. Even attorney fees are budgeted by matter at issue at each site.

Tracking of actual costs against budget is done monthly. Every expenditure is required to tie directly to a budget line item. Any deviation from the original approved budget requires a modification to the budget forecast to be prepared. That document explains the problem causing the deviation, any implications for current and future MGP budgets, and a list of pending tasks that might be deferred. That list is prepared by the Company's Director of Environmental & Safety Services, so that his judgments about program priorities can be incorporated into any necessary deferrals. Each year's budget incorporates an amount for contingencies, and the Director, in consultation with the Purchasing staff, might decide that the problem can be addressed by an allocation of contingency funds. Alternatively, if necessary, a request for additional funds can be sent to Company management.

The Company's Purchasing department also continuously analyzes Company expenditures, often comparing new bids for an item or service currently being used against rates being paid for that same item or service under current contracts. If the rates under the current contract seem out of line with new quotes, Purchasing may go back to the current contractor to seek a cost reduction.

The Company's Environmental department maintains program documents.[23] Files are organized by MGP site, and by area of concern (AOC) within each site. Environmental maintains current records in hard copy on-site. Copies of key plan and study documents are also kept in a small library on-site, with copies at the office of the consulting engineering firm that is assisting at each site. Older correspondence is maintained in a computerized document storage and retrieval system, a terminal for which is also located in the library area.

Liberty asked to see certain sample documents, which were readily available. Liberty was also offered a compact tutorial on the operation of the Company's document retrieval system.

[23] The Company's Legal Department maintains the originals of all contracts with consultants and execution contractors. Purchasing and Environmental maintain copies. Purchasing also maintains financial information.

8. Interaction with Government Authorities

The correspondence with government agencies, primarily the NJ DEP, was orderly and readily accessible. The correspondence with the NJ DEP showed orderly progress through matters at issue, and appropriate concern for limiting the scope of the Company's (and hence its customers') cost responsibility while meeting its environmental requirements.

The correspondence that Liberty reviewed included the following:

- A discussion of whether lead contamination discovered at certain AOCs was related to MGP operations
- A No Further Action Determination for certain other AOCs
- Quarterly Progress Reports, required by the Administrative Consent Orders from the NJ DEP, for each AOC at each site
- The status of a ground water investigation at certain AOCs
- A letter from an attorney for an adjacent property owner, arguing that the area to be remediated was too small, as it did not contain his client's property
- Annual Project Cost Review, required by the provisions of the Administrative Consent Order for the site.

Liberty found this correspondence to be typical for an operation of this type.

Liberty contacted the NJ DEP Site Manager for the Atlantic Highlands site. She reported that the remediation program at that site is "moving along fairly well". She reported an "open dialogue" with NJNG personnel, and expressed confidence in their efforts. She also remarked favorably on the Company's community-relations activities.

C. Conclusions

1. NJNG has appropriately accepted and sought to fulfill the responsibilities that it sees in this area.

The Company's strategy is to move aggressively to address the MGP problem. The Company's view is that, while there may be some continuing evolution in remediation techniques and criteria for remediation, its risks resulting from inaction or the perception of inadequate response out-weigh any potential gains that might come with a more-restrained pace of action.

Liberty has observed a slower pace at some other companies. We conclude, however, that the location of the Company's sites in populated areas, and the tendency for contaminants to migrate far off of the original sites, make the Company's forceful approach toward remediation a sound one. Liberty finds reasonable the Company's view that the risks of a more restrained or measured program out-weigh any potential benefit of a near-term reduction in the cost burden for NJNG's customers.

2. The Company appropriately managed the resolution of early insurance coverage, and has so far acted reasonably to acquire current coverages; it still faces the question of coverage at Atlantic Highlands and other sites. *(Recommendation #1)*

The Company took the action we would expect to have seen in resolving questions under its earlier coverage. It also undertook an appropriate process for deciding on securing current

insurance for the Long Branch site. It aggressively pursued recovery from its insurer after it failed to act under that coverage. To date, the Company has not had sufficient information about the dimension of efforts at Atlantic Highlands to make insurance (such as it purchased for the Long Branch and Toms River sites) a clearly beneficial option. It will need, however, to remain diligent about that question as more information emerges. The same will be true as work scope becomes more defined at its remaining sites. That insurance will eventually prove to be cost-effective is not a foregone conclusion; it is better viewed as an option that requires continuing review and analysis.

3. The Company has taken appropriate action in prosecuting and defending claims related to MGP issues.

The Company has been both defendant (Manchester) and plaintiff (Kemper) in litigation involving MGP issues. Earlier in the audit period, the Company's senior management did not follow litigation developments as closely as it does now. Nevertheless, it has pursued litigation activities with diligence. The Manchester litigation produced a surprising result, given pre-trial success in dismissing major counts and the position that the Company expected DEP personnel to take. That it suffered a jury verdict finding representation was unfortunate, but nothing that Liberty saw suggested that a lack of diligence produced it. There is no information to indicate that there were realistic ways of producing a settlement before trial, without payment of far more than the Company thought the case was worth, or that it ultimately paid in settlement. That settlement, after the compromise reached in how the BPU would treat the costs for rate recovery, customers will eventually pay an amount that is commensurate with the best available information about the cases value measured before trial. In other words, NJNG ended up with rate-recoverable costs that are close to the best available measure of the case's value before trial, and more than an order of magnitude less than what the plaintiffs appear to have required to settle before trial began.

The Kemper case presented a difficult problem for the Company; it began major litigation in New Jersey that had a time line equivalent with or longer than it was going to take authorities in Illinois to monitor the wind-up of Kemper's business and the distribution of its assets to claimants. Moreover, the lack of transparency with respect to the insurer's financial details, and Illinois' concerns about stakeholders well beyond one individual claimant in New Jersey were disadvantages. Beginning at the start of 2006, outside counsel initiated reasonably aggressive and parallel measures to seek a settlement and move the case procedurally toward a prompt trial date. Early settlement efforts produced an insubstantial offer (which was understandable given the insurer's interest in delay). They did, however, produce a body of evidence and argument and movement toward a trial date that finally did persuade the insurer to make a more substantial offer. That offer far exceeded the prior settlement offer of the insurer and was also in excess of the insurer's reserve amount.

4. The Company's remediation program is staffed by knowledgeable and capable people and has sufficient management visibility.

Program personnel are well qualified and capable, particularly the director. All program personnel have been in their respective jobs for some years. Distribution of program responsibilities among Environmental & Safety Services, Public Affairs and Purchasing accesses

appropriate expertise within the Company as needed. Liberty detected no issues over the dispersal of responsibility among departments.

The Company has two project engineers on its staff for managing program design and execution. These individuals are responsible for design criteria for remediation activities at each site, and working with consulting engineers to develop the activities and work tasks that will be carried out in order to attain the criteria, and to evaluate program progress.

For each site, the Company has a designated Master Service Agreement (MSA). These are consulting engineering firms who provide project engineering support, on-site construction management, and quality control. They work with the Company's project engineers to proceed from design criteria to specific work plans. They then provide an on-site presence for managing the work as it proceeds.

The remediation program for each site is developed by NJNG's Director of EH&S, the respective project engineer for the site and the consulting engineer into discrete work scopes that can be bid out. The Company's Purchasing Department then selects pre-qualified contractors and conducts a competition for each work scope. The budgeting and contracting processes are the subject of detailed procurement procedures, developed initially in 2003 and revised in February 2005.

Senior executives are familiar with program activities, costs, and key decision points. There is regular and sufficiently scoped and detailed reporting to the board of directors.

5. The Company is thoroughly involved in program design and execution.

The scope and nature of the Company's involvement is consistent with the magnitude of the program. As indicated by the expenditure data reported in the first section of this chapter, MGP remediation is a very large program for the Company. The Company's procurement procedures provide a highly structured process that embraces a cooperative team involvement of the Company's Environmental, Procurement, Finance and Legal/Insurance departments. Each department understands its role in the process, and gives the program appropriate resources and priority.

6. NJNG expenditure and documentation tracking, analysis, and control are particularly strong.

The Company's MGP procurement procedures are the best that Liberty has seen. Expenditure tracking and analysis under these procedures constitutes a particular strength. Current documents are readily available, and older documents can quickly be retrieved.

7. The company has not segregated cost information by the various categories established for adjustment clause recovery.

Lawyer and expert fees and the amounts paid to settle claims have not been "earmarked" in a way that makes it possible to assign costs to categories included and excluded from clause recovery. Liberty did examine a division made by a former judge who assisted plaintiffs in deciding how to allocate a litigation settlement among them. It did not provide a description of

its basis and the company's knowledge about its allocation basis is not sufficient to establish that it has a strong analytical foundation.

The Company proposes to address the question of apportionment of costs through dialogue with the principal stakeholders. Beginning in this fashion seems to be the only effective way to proceed, given the lack of a contemporaneous effort to track costs by the relevant recovery categories.

8. The Company's relationships with pertinent government authorities are satisfactory.

Liberty's review of the Company's correspondence with government agencies showed orderly progress through matters at issue. Liberty's contact with NJ DEP personnel suggested that the Department has confidence in the Company's efforts and is satisfied with its progress.

D. Recommendations

1. Provide for ongoing analysis of insurance options for the Atlantic Highlands site and in the future for the other remaining sites. *(Conclusion #2)*

The Atlantic Highlands site has been by far the most expensive of the Company's MGP sites. The company has looked at the potential for securing cost containment and ERCLIP insurance, but has not reached the point where sufficient identification of circumstances will allow for meaningful analysis of the cost effectiveness of such protection. The company should commit to regular reviews and documented quantitative analysis of insurance options as work at Atlantic Highlands proceeds, and later, as work at the remaining sites becomes defined and closer to inception.