

**COMPREHENSIVE MANAGEMENT AND
OPERATIONS AUDITS OF
CONSOLIDATED EDISON COMPANY OF
NEW YORK, INC. AND ORANGE AND
ROCKLAND UTILITIES, INC.**

CASE 14-M-0001

Submitted to the:

New York Public Service Commission

Three Empire State Plaza
Albany, NY 12223-1350

FINAL REPORT

APRIL 21, 2016



NORTHSTAR CONSULTING GROUP

MANAGEMENT CONSULTANTS

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I. EXECUTIVE SUMMARY

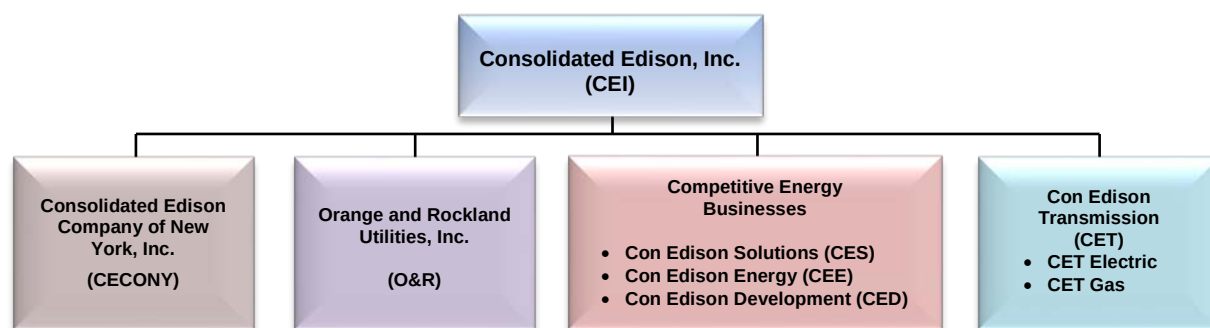
NorthStar Consulting Group, Inc. (NorthStar) was retained by the New York State (NYS) Public Service Commission (PSC) to conduct the Management and Operations Audits of Consolidated Edison Company of New York, Inc. (CECONY) and Orange and Rockland Utilities, Inc. (O&R) (collectively, the Companies or Utilities) (Case No. 14-M-0001). NorthStar was selected to perform the audit in April 2015 and field work was completed in January 2016. This chapter of the report provides an executive summary of our findings and recommendations, with a focus on several broad subjects that cross functional areas and have a significant impact on the operations of the Companies, ratepayers and the PSC's regulation of the Utilities.

A. BACKGROUND

Consolidated Edison, Inc. (CEI) is the holding company that owns CECONY, O&R and three competitive energy businesses (CEBs) with \$12.6 billion in annual revenues and \$45.6 billion in assets. CEI's Form 10-K filed with the Securities and Exchange Commission on February 18, 2016, provides the following background information.¹

Exhibit I-1 provides an overview of CEI's corporate structure.

Exhibit I-1
Consolidated Edison, Inc. Simplified Corporate Structure



Source: CEI Form 10-K for the Fiscal Year Ended December 31, 2015, filed 2/18/2016.

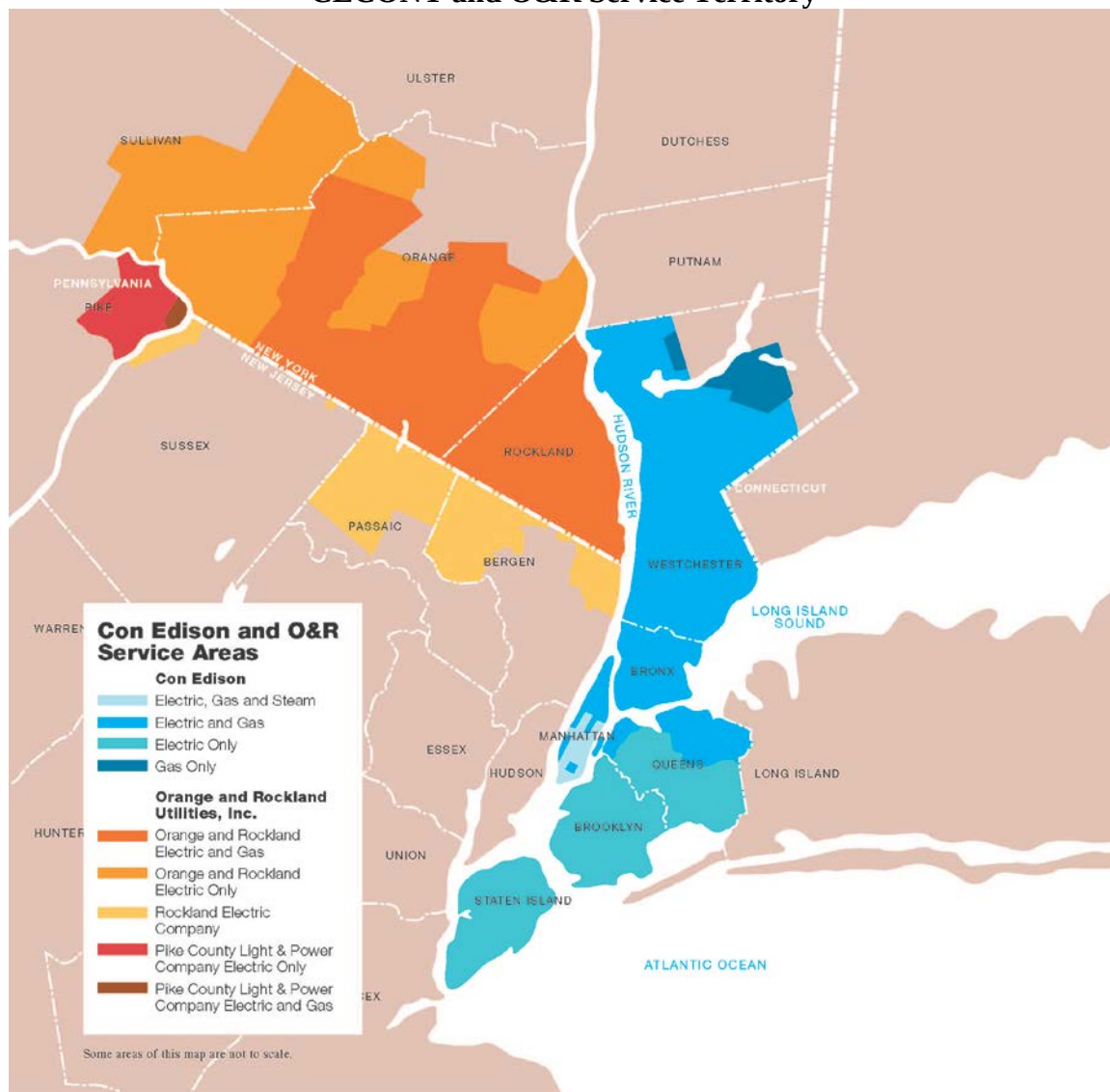
CEI pursues competitive energy opportunities through three wholly-owned unregulated subsidiaries: Con Edison Solutions, Con Edison Energy and Con Edison Development. These businesses respectively sell electricity purchased in wholesale markets to retail customers and enter into related hedging transactions, provide energy-related products and services to wholesale and retail customers, and participate in energy infrastructure projects.

¹ CEI Form 10-K for the Fiscal Year Ended December 31, 2015 filed 02/18/2016

On January 25, 2016, CEI announced that it created a new subsidiary, Con Edison Transmission, Inc. (CET), to invest in electric and gas transmission projects.² CET will operate Con Edison Transmission, LLC (CET Electric) that was formed in 2014 to invest in electric transmission and will manage investments with New York Transco, LLC. CET will also operate Con Edison Midstream, LLC (CET Gas) that was formed in 2016 to invest in gas pipeline and storage businesses.³ Throughout the course of this audit, CET conducted no business activity and had only one designated, shared employee.

These audits focus on the NYS regulated operations of CECONY and O&R. The Companies' service territories are shown in **Exhibit I-2**.

Exhibit I-2
CECONY and O&R Service Territory



Source: DRs 884 and 885

² <http://www.itbusinessnet.com/article/Con-Edison-Creates-Transmission-Subsidiary-4261114>

³ CEI Form 10-K page 14 filed 02/18/2016 and the Company News Page dated 01/25/2016 (see Footnote 2).

CECONY, headquartered in New York, New York, is a regulated utility with \$10.3 billion in revenues and \$40.2 billion in assets.⁴ Electric services are provided in New York City's five boroughs (Manhattan, Bronx, Queens, Brooklyn and Staten Island with the exception of the Rockaway Peninsula in Queens) and parts of Westchester County. CECONY delivers natural gas to approximately 1.1 million customers in the boroughs of Manhattan, the Bronx, parts of Queens and most of Westchester County. CECONY operates the largest steam distribution system in the United States, producing and delivering steam to approximately 1,700 customers in parts of Manhattan. CECONY's service territory covers approximately 660 square miles with a population of more than nine million.

O&R, headquartered in Pearl River, New York, is a regulated electric and gas utility with \$845 million in revenues and \$2.7 billion in assets.⁵ O&R and its two utility subsidiaries, Rockland Electric Company (RECO) and Pike County Light & Power Co. (Pike), have a service territory that covers approximately 1,350 square miles in three counties in New York, three counties in northern New Jersey and one county in northeastern Pennsylvania.

There has been no audit of O&R by the PSC in recent years. The last comprehensive management and operations audit was conducted for CECONY in 2008-2009 by The Liberty Consulting Group.⁶ Liberty's team began work in May 2008 and analytical work was completed early in 2009.

B. KEY AUDIT FINDINGS

CECONY's energy delivery system is one of the most heavily relied upon in the world, serving national and international financial and media centers, a critical infrastructure of tunnels and subways, and more hospitals per square mile than any other city in the world.⁷ While CECONY is a very dense, urban service area, O&R is less densely populated - more suburban and rural. O&R electric and gas services represent one-tenth of CECONY in terms of customers served and energy delivered.

CECONY's electric, natural gas and steam operations perform well overall in providing service in a reliable manner. Similarly, O&R electric and natural gas operations provide reliable service to customers.

Selected findings and highlights of the audit scope areas are as follows.

Governance and Executive Management

The structure and operation of the CECONY and O&R Boards are excellent and led by a very capable team of senior managers. The caliber of directors or trustees is exceptional as befits a premier energy service provider. Processes currently employed are generally those

⁴ CEI Form 10-K filed 02/18/2016.

⁵ CEI Form 10-K filed 02/18/2016.

⁶ Case 08-M-0152, Consolidated Edison Company of New York, Inc. – Management Audit (commenced February 12, 2008).

⁷ Data Request (DR) 56-B

preferred in the industry. The Boards exercise considerable responsibility and authority over the companies' policies, operational practices and resulting performance.

CECONY and O&R have developed appropriate processes for identifying the requirements that form the basis for the Chief Executive Officer (CEO) Certification and the associated policies procedures and controls. The effectiveness of the controls and ensuring they are functioning as intended is not part of the CEO Certification requirement.

Management's strategy for pension and other post-employment benefits (OPEBs), the relative level of risk and obligations are appropriate and within the range of other large utilities studied.

System Planning

The reliability and safety of CECONY's and O&R's systems are very good. Still, weaknesses in the conversion of capital plans to work plans, lack of consistency among organizations and in some cases the availability of performance data at the right organizational levels make it challenging to manage the capital project portfolio.

CECONY does not have one, integrated distribution system plan. Plans are independently developed by CECONY's regions and O&R and are not integrated. Annual business plans are more of a communications tool provided to executive management, rather than a tool to manage the companies.

CECONY faces challenges in both its natural gas distribution and secondary network electric distribution systems. The secondary network system is old and possibly degrading faster than current operations can address. A targeted program for system repair has begun but it is too early in the process to determine the effects. The natural gas pipeline systems at both Companies include leak prone pipe and continued attention to its replacement is fully warranted. While O&R's leak prone pipe replacement program appears manageable, CECONY's accelerated pipe replacement program appears optimistic when faced with revenue, manpower, and geographic challenges that must be overcome within the next few years.

The most immediate opportunity for performance improvement is in the procurement of materials and services for CECONY and O&R. Simply stated, Supply Chain has experienced a reduction in the level of competitively bid contracts. Management must quickly address this functional area.

CECONY and O&R apply a traditional approach to system planning, whose primary mission is to address system reliability deficiencies caused by system aging and demand growth. To support this mission, planners use industry standard models, conduct system studies and recommend system solutions.

Changes in technology, markets, customer expectations and environmental demands, have led the Commission to conclude that its statutory duties can no longer be met by

continuing the standard utility model.⁸ To accommodate these changes, the PSC has begun Reforming the Energy Vision (REV), an initiative that seeks to dramatically change the existing electric industry landscape that can be characterized as highly regulated, capital intensive, risk adverse, hundred-year old institutions. Some of the greatest barriers will be to overcome the challenge of gaining consensus among diverse industry participants and solving real technological issues contained within the vision.

The comprehensive REV reforms are in their early stages of development. CECONY and O&R are actively involved in REV development and are presently developing a distributed system implementation plan (DSIP). However, full development and implementation will take some time, particularly in view of the challenges posed by geographic, economic, environmental and existing system specific requirements, as well as annual demand growth of only one to two percent.

Budgeting

The budgeting process for CECONY and O&R is initiated by senior management and implemented by a team approach that involves officers and managers from many levels. The Boards ultimately approve the results and actively review the largest projects.

Beginning in 2010, CECONY and later O&R have implemented a structured approach to capital project selection designed to optimize the capital project portfolio. This approach begins with a consistent approach to developing business case support for each proposed project. This information is reviewed by multifunction Governance Committees. Ultimately, the information is analyzed with a sophisticated optimization tool, PI360, developed by Microsoft. Results are reviewed by project sponsors and Governance Committees. Adjustments are made as needed and the portfolio of projects is re-optimized as needed. The results are reviewed by successive layers of management and ultimately approved by the Boards. Improvements are ongoing; however, even in its current state, this process is better than processes observed at other utilities.

O&M budgets are prepared in parallel with capital budgets. Guidelines are provided from the top down. Specific budget amounts are developed from the bottom up by determining the work needed to accomplish each organization's major objectives. The amount of work that the organization can accomplish is based on historical productivity and anticipated improvements due to new or enhanced technology and work process improvements.

Program/Project Management

CECONY and O&R have made considerable progress in developing project management capabilities since the prior management audit. At this point, efforts are somewhat disjointed as various functional areas are in different stages of their evolution. The Companies are at

⁸ Case 14-M-0101, Reforming the Energy Vision, Order Adopting Regulatory Policy Framework and Implementation Plan (referenced as the "Track One Order" or "Framework Order")(issued February 26, 2015), p. 48.

the point where corporate standard practices and a centralized process control point would be the most beneficial.

Opportunities for improvement exist in the scheduling and tracking of smaller projects, the use of work breakdown structures and CECONY's treatment of engineering and construction oversight costs for capital projects. At both Utilities, there are several organizations that are responsible for program and project management, with different processes for tracking project cost and schedule performance. CECONY and O&R are taking steps towards a more consistent approach to project management throughout the organizations. With the exception of CECONY Electric Operations, O&R and CECONY organizations have recently implemented, or are in the process of implementing uniform project management systems and tools. CECONY recently implemented a corporate-wide governance committee process which includes a management review program and project costs. O&R has had a process in effect for a number of years.

Work Management

With the exception of CECONY Gas Operations, CECONY and O&R have improved their work management systems and processes in the past few years. Since the last PSC management audit in 2009, CECONY Electric Operations has improved its work management capabilities by establishing a Work and Resource Management organization and implementing a new work management system. O&R has benefitted from a good work management system for many years and continues to add to its capabilities. CECONY Gas Operations has recognized the need for improved work management and has initiated the development of standardized work and asset management business processes and systems. Other than CECONY Electric Operations, the CECONY and O&R organizations do not routinely report trends of workforce productivity and utilization, and CECONY organizations do not generally use work management system data for long-term resource planning. None of the Utilities' engineering groups have formal, standardized work management programs.

Performance Management

O&R's performance management processes and systems were the focus of NorthStar's audit as specified in the Request for Proposal (RFP) and final work plan. Although there are many similarities between CECONY and O&R's performance management processes and key performance indicators (KPIs), CECONY's KPIs were not part of the detailed scope of this audit.

KPIs and targets are established as part of the business planning process and are tied to the corporate mission, goals and objectives. KPIs are measurable, and appropriately include both leading and lagging indicators; however, most of the targets do not change from year to year, or they are set by the PSC. Safety KPIs included a five-year target intended to drive improvement. Stable targets do not tend to foster continuous improvement. O&R's internal targets associated with PSC requirements do not exceed PSC requirements. Many of O&R's (and CECONY's) KPIs are actually an index of a number of individual measures with performance achieved by hitting 4 of 5 or 7 of 8 targets. NorthStar has not typically seen this level of indexing and questions its efficacy as a tool for communicating corporate priorities.

However, only management compensation is tied to the KPIs. For the last five years (2010-2014), O&R has met or exceeded its KPIs and payout pools have been in excess of 100 percent. NorthStar recommends that O&R develop more aggressive targets and revisit a number of its shared services KPIs to ensure they are reflective of the corporate objective rather than the performance of an individual group.

Customer Operations

In the State of New York, utility customer operations are governed by Parts 11 and 13 of the Department of Public Service's New York Code of Rules and Regulations (16 NYCRR). Part 11 provides the rules and regulations governing the provision of service to residential customers by electric, gas and steam utilities and other service providers. Part 11 includes a number of special protections for customers with medical hardships, customers on life support/life sustaining equipment (LSE) and the elderly, blind and disabled (EBD). Part 11 also provides special protections for these customers and other residential heating-related customers during the cold weather season (November 1 – April 15). Part 13 contains the rules and regulations for service to non-residential customers.

From a customer operations perspective, CECONY and O&R operate as distinct and separate utilities. Each operates its own customer information system. They have separate call centers (although each has the technical capability to provide support for the other in the event of an emergency) and payment locations, different websites, different bill formats and other customer communications and each has separate organizations performing the typical customer operations functions: meter reading and billing, credit and collections, customer contacts, new business services, energy efficiency, customer outreach and associated back office and support functions.

NorthStar found minor discrepancies between the requirements of Parts 11 and 13 tested by NorthStar and the policies, procedures, training and notifications used by the Utilities. Typically, these were in the areas of documentation or notification content. Collections notices and payment agreements take different forms at O&R and CECONY. CECONY's notices are printed on the bill, either in the customer reminder section, or, in the case of termination notices, with larger print messages near the top of the bill. Standard notification requirements are included as an insert to the bill. O&R uses separate and very distinct collections notices, which would be difficult to overlook, but may be more costly.

For many of the Parts 11 and 13 requirements, each Utility's customer information system serves as the primary point of control, with calculations, fees, letters, notifications and timing requirements hard coded into the system. LSE, EBD and other Concern (special needs) accounts are given special codes in the customer information systems to prevent certain collections actions.

Both Utilities have appropriate processes for monitoring and assessing customer service levels, responding to customer complaints and inquiries and soliciting customer feedback. CECONY's online community represents a relatively forward looking approach to obtaining customer input on specific issues and allows the utility to test modifications to existing processes and customer-facing materials and systems prior to full-implementation. O&R has

used the online community on a few occasions. Both Utilities have implemented a number of initiatives geared toward better understanding of and response to customer issues.

Shared Services and Affiliate Transactions

CECONY provides shared services to CECONY, CEI, O&R and the CEBs. CECONY's shared service costs are aggregated into two cost pools, one for all of the affiliates of CEI, one for CECONY and O&R. The costs for shared services are allocated using a multi-factor formula based on gross margin, payroll, and net assets. O&R also has a cost pool for sharing costs with its subsidiaries Pike and RECO.

CECONY's multi-factor formula for allocating costs among all the CEI affiliates is flawed. CECONY includes gross margin in calculating the allocation. Gross margin for one of the competitive affiliates was negative in at least one year leading to a possible subsidy by the regulated utilities.

CECONY and O&R use Oracle E-Business Suite as their primary accounting system. Affiliate billing is performed manually through a series of Excel spreadsheets developed by CECONY. Monthly billing is labor intensive and while found to be largely correct, represents a potential for errors.

CECONY and O&R have established policies and procedures for each type of invoice generated by the affiliate billing system. However, a corporate allocation manual that links all types of charges and allocations has not been developed.

C. SUMMARY OF RECOMMENDATIONS

The audit findings and conclusions led to 36 recommendations for improvements in organization, operations, processes, and documentation. The recommendations are listed below, with additional details provided in the chapters. NorthStar believes that all audit recommendations are beneficial even though in many cases the costs and benefits cannot be quantified at this time and must wait for analyses of implementation alternatives. Nevertheless, these recommendations are fundamental to support continued improvement and customer service.

#	Chapter	Recommendation
1	III-1	Increase the level of sharing of best practices between O&R and CECONY by developing a protocol, and explore additional opportunities for potential cost savings resulting from standardized process or economies of scale.
2	III-2	Regarding the Chief Executive Officer (CEO) Certification process: • Develop appropriate processes to disseminate modifications or updates to policies, procedures and controls as a result of Internal Audits and QA reviews to the appropriate CEO Certification representative in order to update matrices as required. • Individuals performing Internal Audits and QA reviews should be aware of the CEO Certification policies, procedures and controls that may be within the scope of the planned review. • On a going forward basis, using a risk-based prioritization process, revisit critical policies, procedures and controls to ensure they properly address the requirements to which they have been assigned. Consider adding monitoring requirements to safety-related procedures.
3	III-3	DPS and the Joint Utilities should meet to clarify all parties' understanding of the requirements of the CEO Certification process.
4	III-4	Replace one or more of the Named Fiduciaries with other employees not directly involved in management of the Consolidated Edison Retirement Plan Trust. The replaced officers, CFO and Chief Accounting Officer, could still provide his/her expertise as the senior officer in his/her area of responsibility. The newly appointed officers could meet the obligations of Named Fiduciaries and draw on the expertise of the senior offices who now serve as Named Fiduciaries.
5	IV-1	Develop comprehensive and integrated electric distribution system plans for CECONY and for O&R that utilize a consistent approach to asset management, regulatory programs (including Reforming the Energy Vision (REV)) and system growth. The initial structure and content of the plans should be included in the Distributed System Implementation Plans (DSIPs) to be submitted to the Commission mid-2016.
6	IV-2	Develop and implement the capital program optimization model across both companies and organizational units in a consistent manner.
7	IV-3	Develop a CECONY comprehensive secondary electric network asset management plan.
8	IV-4	Reevaluate the projected costs and timeline of the Accelerated Main Replacement program for consistency with project objectives.
9	IV-5	Improve competitive procurement levels to reacquire and exceed previous levels of performance.

#	Chapter	Recommendation
10	VI-1	Develop a consistent approach to program and project management throughout CECONY and O&R. Establish and enforce formal project management control procedures, especially regarding instances when CECONY capital projects are transferred between organizations. Establish an organizational unit responsible for standardizing project management practices to accomplish this effort.
11	VI-2	Charge actual CECONY engineering and construction oversight costs directly to capital projects so the booked capital costs reflect the actual costs of the project.
12	VI-3	Revise CECONY processes and procedures to require that estimated and booked project costs include all costs.
13	VI-4	Update CECONY contracting and procurement procedures to assign roles and responsibilities in the event that Bid Check estimate is the low bid.
14	VI-5	Establish a process to ensure that there is a CECONY Project Manager assigned to manage the work when a CECONY project is performed by NYC contractors.
15	VI-6	Formalize the O&R contractor oversight rotation policy and revise O&R contract management procedures to provide more detailed guidance regarding the use of the Contractor Oversight System.
16	VI-7	Perform a formal review of O&R change orders on a semi-annual basis to identify and distribute lessons learned.
17	VII-1	Continue CECONY Gas Operations work management process improvement activities in accordance with its Gas IT Roadmap.
18	VII-2	Develop formal reports on CECONY and O&R trends in work load levels, workforce productivity and utilization.
19	VII-3	Establish formal processes to use work management data for annual resource planning as part of the annual business planning activities of CECONY Gas Operations, Substations Operations, Transmission Operations and Steam Plants.
20	VII-4	Develop formal work management practices for CECONY and O&R engineering organizations. Where possible, leverage the results of CECONY Central Engineering's Continuous Improvement Program. The work management systems should have appropriate system tools to support the various individual and distinct engineering functional processes.
21	VII-5	Develop overtime targets for CECONY and O&R based on economic analyses and verified industry norms.
22	VII-6	Develop formal studies and provide updates of contractor versus in-house costs every three to five years, and use the results of these studies in CECONY and O&R resource planning to determine the optimal use of contractors.
23	VIII-1	Modify the O&R performance management process as follows: • Modify the employee development key performance indicators (KPIs) to be more reflective of the objective, rather than an evaluation of Human Resources. • Establish more aggressive ATIP KPIs targets that are realistic, but not too easily attainable. • Increase the frequency of communication of performance objectives to the overall employee base and ensure that the use of indices is not creating any confusion or minimizing the significance of individual measures. • Make the ATIP dashboards easier to locate on the intranet site.
24	IX-1	O&R needs to complete its review of current processes to determine why the error occurred in the service turn on for a commercial customer which took almost one month to complete and implement necessary changes.

#	Chapter	Recommendation
25	IX-2	CECONY has proposed the following solution to address the issues with the denial of service notification for customers that do not currently have service (i.e., service "cold"). NorthStar concurs with the proposed solution, but notes that CECONY must also address the denial of service and document retention requirements for residential and non-residential denials of service required by Parts 11 and 13 of 16 NYCRR for applicants that currently have service (i.e., service "hot"). • In order to establish processes and controls so that Turn-On denial letters are sent in all cases where service is not already on at the premise, CECONY proposes that a training document be sent to all Customer Service Representatives reminding them of the Turn-On denial process. • In addition, as an interim additional control measure, reports of all of the Turn-On Deny notations will be generated and produced on a daily basis for review. Customer Assistance staff will review the list to validate that the Turn-On Deny letter was sent to the applicant, and take action as necessary. • In the longer term, an automated solution will be evaluated to improve controls. A cross-functional team will be assembled to develop this automated solution and to evaluate feasibility, costs and prioritize implementation. It is expected that a recommendation for an automated solution will be available by third quarter 2016. • Currently, in situations where service is "hot" (i.e., already on at the premise), a control exists if the customer continues to use service but does not contact the company. Accounts registering usage on a meter after a cycle reading that do not have a customer of record generate inactive advance notices which are sent to the location. There is currently a group in Field Operations dedicated to reviewing accounts with a Turn-Off field order, which is generated after two cycle readings register usage on a meter.
26	IX-3	Modify O&R's Joint Procedures – 0011 "Customer Deposits for Gas and Electric Service" as follows: • Eliminate the section that allows O&R to charge a deposit for a new residential customer that is considered a credit risk. • Modify the language regarding deposit payment arrangements to allow the customer to pay in 12 monthly installments. • Eliminate the language that indicates that residential customers that cannot pay the deposit in full will either be turned off or not turned on. • Clarify that the payment of the security deposit in full as a condition of service for non-residential customers is applicable to new customers only. • Clarify the language regarding the length of time non-residential deposits such that it is clear that deposits will only be held longer than 3 years in the event of delinquency.
27	IX-4	Make the following modifications to O&R's collections notices and website: • Once current stock has been depleted or other changes warrant, modify O&R's "Your Rights and Responsibilities as a Commercial Customer of Orange & Rockland" to specifically inform non-residential customers that they may request a review to ensure a required security deposit is not excessive. • Modify O&R's residential customer broken agreement letter to include the address and telephone number of the appropriate social services office or the local social service information number, as required by Part 11.10 of HEFPA. • Correct the portion of O&R's web page describing the requirements for enrollment into the residential levelized payment plan to clarify that customers may enroll at any time.
28	IX-5	Modify CECONY's CSR training (DR 201-C, Attachment 12, p. 9-14) to be consistent with the security deposit installment plan requirements of HEFPA. According to a 2/18/16 email from CECONY this issue has already been corrected in response to NorthStar's inquiry of 2/17/16. NorthStar has not verified the correction.

#	Chapter	Recommendation
29	IX-6	Evaluate and document the following modifications to CECONY's bills and collections notices: • Modify the bill notice section to better highlight critical collections-related bill messages. • Correct CECONY's demand rate bill formats to correctly display the rates. • Modify CECONY's Special Agreement Offer (SAO) postcard to contain language regarding financial need, the \$10 minimum offer or the customer's ability to modify the terms based on changes in their financial circumstances.
30	IX-7	Determine the cost of limiting CIMS access (O&R) such that CSRs cannot remove the LSE code on a customer account (should be performed by a supervisor or other applicable group) or manually issue a lock for non-payment order on an EBD or LSE customer account. Alternatively, develop reporting to determine if such an event has occurred.
31	IX-8	As part of the current rate case, CECONY and the DPS should review CECONY's customer satisfaction scoring methodologies and associated targets to ensure the indices provide the best information possible.
32	X-1	Replace the spreadsheet-based affiliate billing process with an Oracle-based or other compatible based billing system.
33	X-2	Develop a corporate cost allocation manual that provides an overview of all allocations in the CEI enterprise and specific account numbers relating back to the shared services organization.
34	X-3	Replace the three-factor allocation formula for CEI costs with a more appropriate formula.
35	X-4	Establish CEI guidelines or clarify the Code of Conduct before appointment of future executives to the Boards of CEBs to prohibit executives with current experience in roles at the utilities related to the business engaged in by the CEB from serving on their Boards.
36	X-5	Follow CECONY internal procedures regarding oversight of affiliate transactions. Affiliate transactions should be a part of the responsibilities of the Regulatory Compliance Committee.

II. AUDIT BACKGROUND

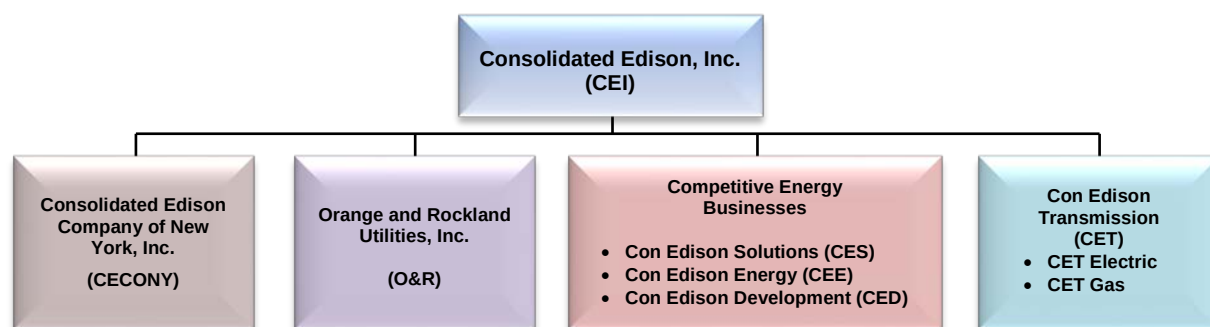
On December 11, 2014, the New York State Public Service Commission (PSC or the Commission) issued a Request for Proposal (RFP) in Case 14-M-0001 for consultants to perform Comprehensive Management and Operations Audits of Consolidated Edison Company of New York, Inc. (CECONY) and Orange and Rockland Utilities, Inc. (O&R) (collectively, the Companies or Utilities). NorthStar Consulting Group, Inc. (NorthStar) was selected to perform the audits in April 2015.

Pursuant to Public Service Law §66(19), the PSC has the power to hire a consulting firm to perform comprehensive management and operations audits. These audits, managed by the Department of Public Service (DPS) Staff, provide an opportunity to gain valuable insight into the Utilities' operations and management. NorthStar conducted these audits in a constructive manner, characterized by frank and open discussion of findings, conclusions and recommendations. NorthStar's final report provides a comprehensive, independent and objective evaluation of current performance, specifically with respect to the Utilities' governance and executive management, construction program planning and execution, capital and O&M budgeting, and customer operations and provides recommendations for performance improvements.

A. OVERVIEW

Consolidated Edison, Inc. (CEI) is the holding company that owns CECONY, O&R and three competitive energy businesses (CEBs) with \$12.6 billion in annual operating revenues and \$45.6 billion in total assets.¹ **Exhibit II-1** provides an overview of CEI's corporate structure.

Exhibit II-1
Consolidated Edison, Inc. Simplified Corporate Structure



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CEI's Form 10-K filed with the Securities and Exchange Commission on February 18, 2016, provides the following background information.² CEI pursues competitive energy

¹ CEI Form 10-K for the Fiscal Year Ended December 31, 2015, filed 2/18/2016, page 7.

² CEI Form 10-K for the Fiscal Year Ended December 31, 2015, filed 2/18/2016.

opportunities through three wholly-owned subsidiaries: Con Edison Solutions, Con Edison Energy and Con Edison Development. These businesses sell electricity purchased in wholesale markets to retail customers and enter into related hedging transactions, provide energy-related products and services to wholesale and retail customers, and participate in energy infrastructure projects.³

On January 25, 2016, CEI announced that it created a new subsidiary, Con Edison Transmission, Inc. (CET), to invest in electric and gas transmission projects⁴ CET will operate Con Edison Transmission, LLC (CET Electric) that was formed in 2014 to invest in electric transmission and will manage investments with New York Transco, LLC. CET will also operate Con Edison Midstream, LLC (CET Gas) that was formed in 2016 to invest in gas pipeline and storage businesses.⁵ Throughout the course of this audit, CET conducted no business activity and had only one designated, shared employee.

These audits focus on the New York State regulated operations of CECONY and O&R. The Companies' service territory is shown in **Exhibit II-2**.

CECONY, headquartered in New York, New York, is a regulated utility with \$10.3 billion in operating revenues and \$40.2 billion in total assets.⁶ Electric services are provided in New York City's five boroughs (Manhattan, Bronx, Queens, Brooklyn and Staten Island with the exception of the Rockaway Peninsula in Queens) and parts of Westchester County. CECONY's service territory covers approximately 660 square miles with a population of more than nine million.

CECONY's electric transmission and distribution system consists of 97,286 miles of underground cable and 36,929 miles of overhead wires.⁷ During the summer of 2015, CECONY's electric peak demand was 12,316 MW (which occurred on July 20, 2015). The company decreased its five-year forecast electric peak demand average annual growth from approximately 0.9 percent (for 2015 to 2019) to 0.2 percent (for 2016 to 2020).⁸

CECONY delivers natural gas to approximately 1.1 million customers in the boroughs of Manhattan, the Bronx, parts of Queens and most of Westchester County. In May 2015, the company decreased its five-year forecast of average annual growth of the peak gas demand in its service area from approximately 2.8 percent (for 2015 to 2019) to 2.3 percent (for 2016 to 2020).⁹ The decrease reflects, among other things, that the new five-year forecast no longer covers the 2014/2015 heating season, the fourth year in which there was a significant increase in oil-to-gas conversions following changes to New York City regulations that will phase out the use of certain types of heating oil.

³ CEI Form 10-K page 14, filed 02/18/2016 – Competitive Energy Businesses.

⁴ <http://www.itbusinessnet.com/article/Con-Edison-Creates-Transmission-Subsidiary-4261114>

⁵ CEI Form 10-K for the Fiscal Year Ended December 31, 2015, filed 2/18/2016, page 28 and the Company News Page dated 01/25/2016 (see Footnote number 3).

⁶ CEI Form 10-K for the Fiscal Year Ended December 31, 2015, filed 2/18/2016, page 44.

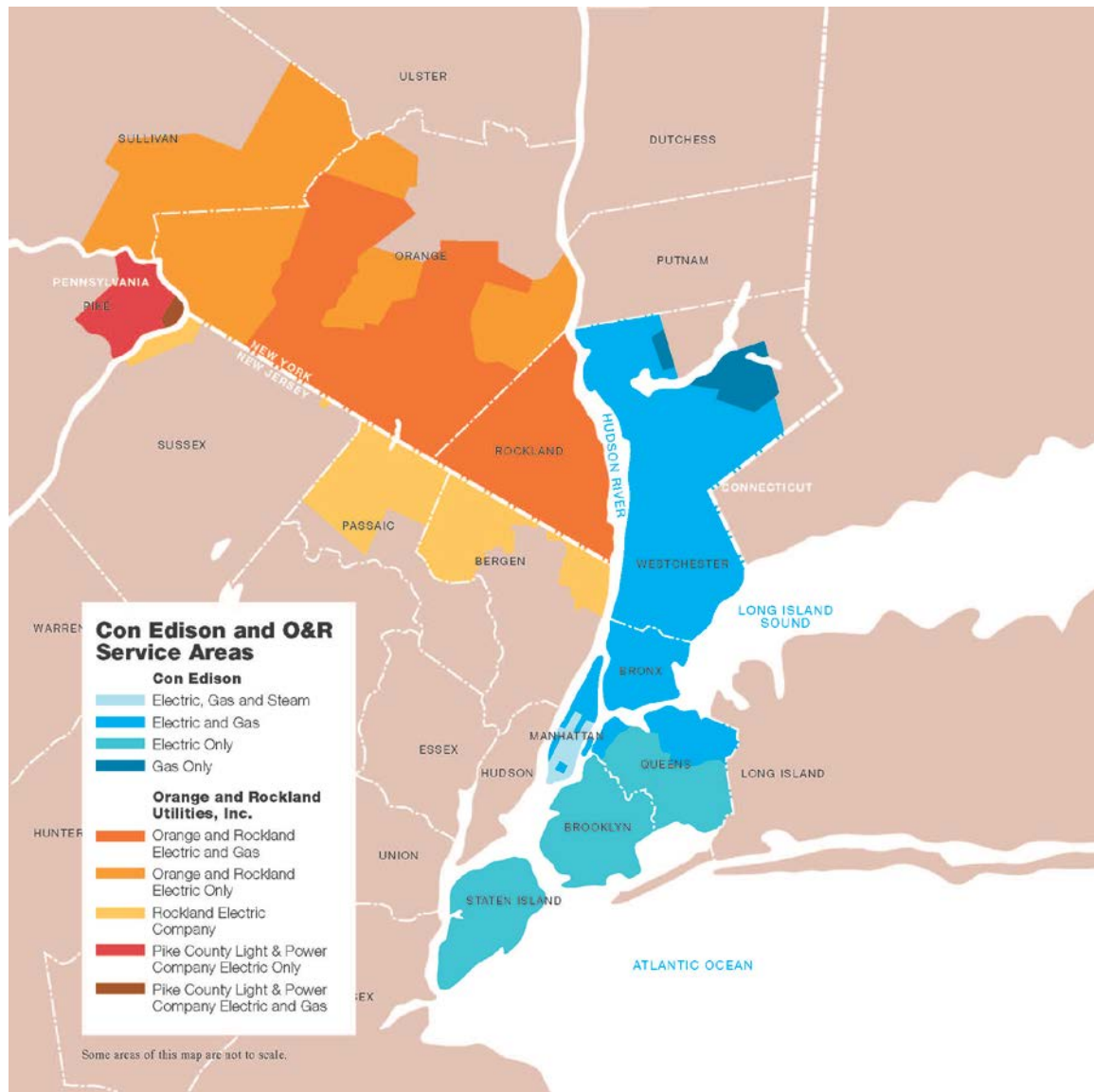
⁷ CEI Form 10-K for the Fiscal Year Ended December 31, 2015, filed 2/18/2016, page 19.

⁸ CEI Form 10-K for the Fiscal Year Ended December 31, 2015, filed 2/18/2016, page 20.

⁹ CEI Form 10-K for the Fiscal Year Ended December 31, 2015, filed 2/18/2016, page 22.

CECONY operates the largest steam distribution system in the United States, producing and delivering approximately 22,000 million pounds (MMlb) of steam annually to approximately 1,700 customers in parts of Manhattan.

Exhibit II-2 CECONY and O&R Service Territory



Source: DRs 884 and 885

O&R, headquartered in Pearl River, New York, is a regulated electric and gas utility, with \$845 million in revenues and \$2.7 billion in assets.¹⁰ O&R and its two utility subsidiaries, Rockland Electric Company (RECO) and Pike County Light & Power Co. (Pike), have a service territory that covers approximately 1,350 square miles in three counties

¹⁰ CEI Form 10-K for the Fiscal Year Ended December 31, 2015, filed 2/18/2016, page 44.

in New York, three counties in northern New Jersey and one county in northeastern Pennsylvania.

In October 2015, O&R entered into an agreement to sell Pike, which operates entirely in Pennsylvania, to Corning Natural Gas Holding Corporation for \$16 million, including estimated working capital adjustments. The closing of the sale, which O&R expects to occur within the next 12 months, is subject to certain regulatory approvals by the Federal Energy Regulatory Commission (FERC) and Pennsylvania Public Utility Commission.¹¹

O&R, RECO and Pike provide electric service to approximately 300,000 customers. During the summer of 2015, electric peak demand in the company's service area was 1,405 MW (which occurred on July 20, 2015) compared to the forecast of 1,645 MW. The company decreased its five-year forecast of average annual growth of the electric peak demand from approximately 0.9 percent (for 2015 to 2019) to 0.3 percent (2016 to 2020).¹²

O&R, RECO and Pike own, in whole or in part, electric transmission and distribution facilities which include 547 circuit miles of transmission lines, 1,889 miles of underground distribution cable and 3,994 pole miles of overhead distribution wires.¹³

O&R and Pike own their gas distribution systems and O&R owns a gas transmission system, which together include 1,876 miles of gas main.¹⁴ O&R delivers natural gas to 132,000 customers in southeastern New York and adjacent areas of northeastern Pennsylvania.

Prior Audits

A number of prior audits and significant events provide a backdrop of issues that contribute to the review topics and shape the investigation of this management audit.

There has been no audit of O&R since the DPS's management and audit process was reinstituted in 2008. However, the last management audit of O&R was performed in 1993.¹⁵ The last comprehensive management and operations audit was conducted for CECONY in 2008-2009 by The Liberty Consulting Group.¹⁶ Liberty's team began work in May 2008. The bulk of the research and analytical work was completed early in 2009. Liberty's audit report provided the results of its analysis, including its conclusions regarding CECONY's performance in the following audit scope areas:

- Corporate mission, objectives, goals and planning
- Long-term load forecasting
- Supply procurement

¹¹ CEI Form 10-K for the Fiscal Year Ended December 31, 2015, filed 2/18/2016, page 144.

¹² CEI Form 10-K for the Fiscal Year Ended December 31, 2015, filed 2/18/2016, page 24.

¹³ CEI Form 10-K for the Fiscal Year Ended December 31, 2015, filed 2/18/2016, page 24.

¹⁴ CEI Form 10-K for the Fiscal Year Ended December 31, 2015, filed 2/18/2016, page 25.

¹⁵ Case 93-M-0814, Orange and Rockland Utilities, Inc. – Management Audit (commenced September 17, 1993).

¹⁶ Case 08-M-0152, Consolidated Edison Company of New York, Inc. – Management Audit (commenced February 12, 2008).

- Long-term system planning
- Capital and O&M budgeting
- Program and project planning and management
- Work management
- Performance and results measurement.

In February 2009, the PSC commenced a proceeding to examine the prudence of certain CECONY expenditures following the arrests of employees for accepting illegal payments from a construction contractor. Subsequently, additional employees were arrested for accepting illegal payments from materials suppliers and an engineering firm. The arrested employees were terminated by the company and have pled guilty or been convicted.¹⁷

As part of this proceeding, Charles River Associates (CRA), the consulting firm selected by the PSC, reported in January 2013 its estimate of overcharges with respect to a portion of CECONY's construction program from January 2000 to January 2009. CRA did not review CECONY's other expenditures. In September 2015, CECONY, the DPS Staff and others entered into a Joint Proposal to settle this proceeding and related matters. The terms of the Joint Proposal must be adopted by the PSC to become effective.

On March 12, 2014, two multi-use five-story tall buildings located on Park Avenue between 116th and 117th Street in Manhattan were destroyed by an explosion and fire.¹⁸ CECONY had delivered gas to the buildings through service lines from a distribution main located below the ground under Park Avenue. Eight people died and more than 50 people were injured. Additional buildings were also damaged. The National Transportation Safety Board (NTSB) was the lead investigating agency. The parties to the investigation included CECONY, the City of New York, the Pipeline and Hazardous Materials Safety Administration and the PSC (which also conducted an investigation). In June 2015, the NTSB issued a final report concerning the incident, its probable cause and safety recommendations. The NTSB determined that the probable cause of the incident was (1) the failure of a defective fusion joint at a service tee (which joined a plastic service line to a plastic distribution main) installed by the company that allowed gas to leak from the distribution main and migrate into a building where it ignited; and, (2) a breach in a City sewer line that allowed groundwater and soil to flow into the sewer, resulting in a loss of support for the distribution main, which caused it to sag and overstressed the defective fusion joint. The NTSB recommended that the company address its procedures for the preparation and examination of plastic fusions, and train staff on conditions for notifying the City's Fire Department.

In June 2014, the PSC initiated a proceeding with all New York gas utilities to investigate the practices of qualifying persons to perform plastic fusions on gas facilities. New York State regulations require gas utilities to qualify and, except in certain circumstances, annually requalify workers that perform fusions to join plastic pipe. The PSC directed the New York gas utilities to provide information in this proceeding about their compliance with the qualification and requalification requirements and related matters; their procedures for

¹⁷ CEI Form 10-Q page 22, filed 11/5/2015.

¹⁸ CEI Form 10-Q page 29, filed 11/5/2015

compliance with all gas safety regulations; and their annual chief executive officer certifications regarding these and other procedures. CECONY's qualification and requalification procedures had not included certain required testing to evaluate specimen fuses. In addition, CECONY and O&R had not timely requalified certain workers that had been qualified under their respective procedures to perform fusion to join plastic pipe. CECONY and O&R have now requalified their workers who perform plastic pipe fusions.¹⁹ In May 2015, the PSC:

- Indicated that it would address enforcement at a later date.
- Ordered CECONY, O&R and other gas utilities to perform risk assessment and remediation plans, additional leakage surveying and reporting.
- Ordered CECONY to hire an independent statistician to develop a risk assessment and remediation plan.
- Ordered the gas utilities to implement certain new plastic fusion requirements.

In October 2015, O&R submitted to the PSC staff the company's risk assessment and its recommendation that the development of a remediation plan is unnecessary and further recommended that the PSC staff determine that the O&R's risk assessment activities are complete.²⁰

B. SCOPE AND OBJECTIVES

PSC management audits are based on a framework of a series of elements or functions which can be viewed as a feedback loop. This framework begins with the element of Corporate Governance and ends with Shared Services and Affiliate Transactions. The feedback loop typically facilitates changes and improvements that will result in better performance. NorthStar assessed CECONY's and O&R's efficiency and effectiveness in meeting its performance goals and the extent to which there are opportunities for improvement and included the following seven elements:

- Corporate Governance
- System Planning and Capital and Operation & Maintenance (O&M) Budgeting
- Program and Project Planning and Management
- Work Management
- Performance and Results Management
- Customer Operations
- Shared Services and Affiliate Transactions

This report presents NorthStar's observations, findings and conclusions, and recommendations for improvements as of the time of the audit. The term "currently" when used in the report should be interpreted to mean "as of the time of the audit technical review", which was completed in January 2016 for a draft report submitted to DPS Staff on February 27, 2016.

¹⁹ CEI Form 10-Q page 23, filed 11/5/2015

²⁰ CEI Form 10-Q page 23, filed 11/5/2015

C. METHODOLOGY

NorthStar prides itself on performing independent and objective management audits. In this context, we planned and conducted the audits to maximize DPS Staff participation, and worked closely with the DPS Project Manager, CECONY and O&R throughout the engagement.

The RFP, proposal and approved work plan identified a time schedule for the audits assuming an early June 2015 start date, submission of a draft report in February 2016, and final report by March 2016. The initial Draft Report was submitted to the DPS Staff on February 27, 2016. DPS reviewed the initial draft report during the first half of March 2016. A Fact Verification and Confidentiality review was performed by CECONY/O&R during the second half of March and the Final Report was submitted to the DPS on April 21, 2016.

The audit was conducted in three phases:

- Phase I. Orientation and Planning
- Phase II. Technical Review and Customer Benefit Analysis (CBA) Development
- Phase III. Report Development

Phase I. Orientation and Planning

The objectives in the first phase of the audit were to confirm our understanding of the audit objectives and scope and the DPS expectations from the audit; finalize contractual, project management and other administrative matters; perform preliminary data collection; and develop and obtain approval of our detailed work plan which guided our activities during the remainder of the audit. The following work activities were conducted during this phase:

- Finalized logistical and contractual arrangements with CECONY, O&R, and DPS Staff. Specifics regarding project logistics, key contacts, interfaces, schedules and communications were established as were protocols for the audit, which included the following:
 - Procedures for requesting and tracking interviews and documents,
 - Working paper and documentation requirements,
 - Procedures for adhering to auditing standards,
 - Policies and procedures for treating confidential information, and
 - Quality control and reporting procedures.
- Met with DPS Staff to discuss any concerns regarding CECONY/O&R and any additional issues or areas to be considered, and further explored DPS Staff's objectives for the audit.
- Reviewed responses to initial document requests.
- Attended a CECONY/O&R orientation presentation and conducted initial interviews.

- Prepared the final work plan and obtained DPS approval. The work plan was submitted to the DPS on July 30, 2015, approved on October 9, 2015, and included detailed evaluative criteria, tasks, activities, consultant assignments and hours, and a revised audit schedule.

Phase II. Technical Review and CBA Development

In this phase, the audit team performed its principal investigation, data collection and other technical review activities for each of the audit elements. In general, our audit tasks and activities included the following:

- Review and analysis of documents and other data requested from CECONY/O&R,
- Interviews with appropriate CECONY and O&R personnel,
- Field observations,
- Testing for compliance with CECONY, O&R, industry and other standards, and
- Reporting progress to DPS Staff.

NorthStar's audit activities included 936 data requests and 247 interview requests. In formulating conclusions, the audit team focused on substantive issues. CECONY's and O&R's management practices were evaluated against existing rules and regulations as well as sound, generally accepted business practices. We applied a standard of reasonableness which regulators and courts have accepted in a wide range of evaluations of management performance — one that does not require perfection, is not based on outcomes, and does not rely on hindsight. The audit conclusions reflect areas where the utilities are appropriately managing as well as areas where improvement is required.

During this phase NorthStar also developed Customer Benefit Analyses (CBAs) for each of the audit recommendations. The CBAs provide a detailed description of the expected costs and benefits resulting from the implementation of NorthStar's recommendations, and, where applicable, a five-year payback analysis. Capital and O&M costs are separately identified and include: labor costs, outside services, materials and equipment, systems and other costs. Some recommendations may result in modifications to existing practices and do not result in increased costs. Benefits may include: increased productivity, improved reliability, reduced expenses, reduced capital requirements, reduced full time equivalent staffing (FTEs) – internal labor or contractors, improved practices and processes, improved schedule adherence, improved work quality, optimized organization, or improved analytics. While all recommendations have defined benefits, not all have readily quantifiable cost savings. The CBAs were submitted to CECONY and O&R for review and to include any readily available cost and benefit information.

Phase III. Report Development

Upon completion of the audit field work and analyses, NorthStar prepared draft and final reports. A preliminary draft report was prepared and submitted to the DPS project manager for review and comment on February 27, 2016. The report included an executive summary, a description of the audit process, and chapters that addressed each of the audit topic areas. Each of these focused chapters included a background, evaluative criteria, findings and

conclusions, and recommendations. Preliminary CBA forms were submitted separately to the DPS project manager following submittal of the initial draft report. Based on feedback from the DPS Staff and fact verification by CECONY and O&R, NorthStar prepared and submitted a Final Report and CBAs to the DPS Project Manager on April 21, 2016.

D. ORGANIZATION OF THE REPORT

The report is organized to provide an orderly flow of topics and conclusions that reflect the issues identified by the audit, rather than by the ordering of the elements in the feedback loop. The remainder of the report is organized as follows:

Chapter I:	Executive Summary
Chapter II:	Audit Background (this chapter)
Chapter III:	Corporate Governance
Chapter IV:	System Planning
Chapter V:	Capital and O&M Budgeting
Chapter VI:	Program and Project Management
Chapter VII:	Work Management
Chapter VIII:	Performance and Results Management
Chapter IX:	Customer Operations
Chapter X:	Shared Services and Affiliate Transactions
Appendix:	Customer Benefit Analyses

III. CORPORATE GOVERNANCE

This chapter provides the results of NorthStar's review of the governance processes of Consolidated Edison, Inc. (CEI), Consolidated Edison Company of New York, Inc. (CECONY), and Orange and Rockland Utilities, Inc. (O&R) as they relate to the New York regulated utilities.

A. BACKGROUND

In general, governance refers to the system of rules, practices and processes by which a company is directed and controlled. Corporate governance essentially involves balancing the interests of a company's many stakeholders – shareholders, management, regulators, customers, suppliers, financiers, government and the community. It provides the framework for achievement of a company's objectives. Effective executive management and governance structures and processes have the following attributes:

- An experienced, knowledgeable and involved board of directors or trustees should have the appropriate committees to provide effective oversight and direction.
- The board of directors or trustees should be comprised of the right number of members.
- Board members and top executive management personnel should possess the right skills necessary for managing a company.
- A proper organizational focus and direction should be supported by effective corporate planning and performance reporting.
- There must be an effective means of communication among the board members, management executives, and company personnel on important business, legal and regulatory issues including cost and performance results.

CEI is a holding company that owns all of the outstanding common stock of CECONY - a regulated electric, gas and steam transmission and distribution utility; O&R - a regulated electric and gas transmission and distribution utility; and a number of competitive energy businesses (CEBs). CEI is governed by a Board of Directors while CECONY is governed by a Board of Trustees and O&R is governed by a Board of Directors.

For a public company, such as CEI and its subsidiaries, CECONY and O&R, a board of directors or trustees must provide overall guidance, direction and oversight of the management of the company and impartial review of management decisions. The value of the board can also be strengthened by the presence of independent directors or trustees not associated with the company. Independent directors or trustees provide an outside view, can add business perspective, and offer suggestions based on the experience of other industries. Many companies with a strong tie to specific communities include community or regional non-profit leaders on their boards to provide adequate representation of the needs of their customers.

Generally, the responsibilities of a board of directors or trustees include oversight of three major business areas: operations, decision-making and a vision for the future.

- Operational management focuses on performing the work and producing expected results. Operational oversight therefore includes approval of operating and capital budgets as well as the issuance of financial instruments.
- Decision-making responsibilities include directing performance, goal setting and maintaining the course of the business.
- Vision and leadership provide real-life examples of executive management, corporate perspective and values, and direction for the future of the enterprise.

Subsidiary corporations (such as CECONY and O&R) of a higher-level entity (CEI) must have a board of directors to fulfill their legal responsibilities. Subsidiary boards often consist entirely of inside directors, typically the senior management of the subsidiary itself, the parent company, or other subsidiaries. Subsidiary boards generally meet infrequently, often by phone, engage in limited discussions, and take action by consensus, at times making their value to the parent board limited.

The CEI Board of Directors consists of eight independent Directors, one non-independent Director, and John McAvoy, the President, Chief Executive Officer (CEO) and Chairman of the Board.¹ These Directors also serve as Trustees of CECONY.² The Board nominates all Directors for election at the Annual Meeting and recommends the election of each of the nominees. Once members are elected, the Board selects the Company's CEO and Chairman of the Board. In May 2015, ten Directors were nominated and elected. **Exhibit III-1** provides summary information about the Director nominees.

CEI Directors are elected at the Annual Meeting of Stockholders and CECONY Trustees are elected by CEI, the sole stockholder. They hold office until the next annual meeting or until their respective successors are elected and qualified. CEI Directors are permitted to stand for election each year until they reach the mandatory retirement age of 75. Of the Board members standing for election at the Annual Meeting of Stockholders held in May 2015, only John McAvoy is a current officer of CECONY (and O&R). All of the May 2015 CEI Director nominees were elected at the 2014 Annual Meeting except Linda S. Sanford, who was elected to the CEI Board of Directors effective January 15, 2015. Two prior CEI Directors were not nominated for re-election in May 2015. The Board reduced the number of Directors to ten members prior to the Annual Meeting.

¹ CEI Form 10-K for the Fiscal Year Ended December 31, 2015, filed 2/18/2016, page 41 and http://www.conedison.com/investor/governance/board_of_directors.asp. Ms. Futter is not "independent" as defined in the New York Stock Exchange's listing standards.

² Processes apply to both the CEI Board Members and the CECONY Trustees.

Exhibit III-1

CEI Board of Directors Committee Membership Effective April 2015

Name	Committee Memberships								
	Independent	Audit	Corporate Governance And Nominating	Environment Health and Safety	Executive	Finance	Management Development And Compensation	Operations Oversight	Planning
Vincent A. Calarco Director since 2001	✓	✓ (C)	✓		✓		✓		
George Campbell, Jr. Director since 2000	✓		✓		✓		✓ (C)	✓	
Michael J. Del Giudice Director since 1999	✓	✓	✓ (C)(L)		✓		✓		
Ellen V. Futter Director since 1997				✓ (C)				✓	✓
John F. Killian Director since 2007	✓	✓	✓				✓		
John McAvoy Director since 2013					✓ (C)				
Armando J. Olivera Director since 2014	✓			✓		✓		✓	
Michael W. Ranger Director since 2008	✓	✓				✓		✓ (C)	
Linda S. Sanford Director since 2015	✓			✓		✓			✓
L. Frederick Sutherland Director since 2006	✓	✓				✓ (C)	✓		

Table Key: ✓ = Member (C) = Chair (L) = Lead Director

Source: http://www.conedison.com/investor/governance_board_of_directors.asp

Each of the Director nominees must receive a majority of the votes cast at the Annual Meeting, in person or by proxy, to be elected. Abstentions and broker non-votes are voted neither “for” nor “against,” and have no effect on the vote.

O&R has three members on its Board of Directors who are elected by the CEI Chairman on behalf of CEI the sole shareholder of O&R.³ The three O&R Board members are:

- John McAvoy – CEI Chairman and CEO
- Timothy P. Cawley – O&R President and CEO
- Mary K. Schuette – non-management Director⁴

CEO Certification

On March 25, 2013, Governor Andrew M. Cuomo outlined reforms to strengthen the oversight and enforcement mechanisms of the Public Service Commission (PSC) to ensure that major electric and gas utility companies are held accountable to regulators and customers. The implemented reforms were based on recommendations made by the Moreland Commission which was established by the Governor following Superstorm Sandy. Pursuant to Public Service Law (PSL) §65(15):

The chief executive officer of each combination gas and electric corporation shall certify to the commission on or before March fifteenth of each year that such corporation has internal controls, policies and procedures designed to ensure compliance with the requirements of this chapter and any rules, regulations, orders and procedures adopted thereto, including the obligation that such corporation provide safe and adequate service.⁵

³ DRs 43, 575 and 677-Delegation of Authority Confidential Responses

⁴ Ms. Schuette, an O&R Director since September 2014 was previously an employee of CECONY since 1985 and a Vice President, CECONY Legal Services from 2008 to 2014

⁵ N. Y. Public Service Law § 65(15) (2016)

To address the requirements of PSL §65(15), CECONY and O&R, in conjunction with National Grid, New York State Electric & Gas/Rochester Gas & Electric, and Central Hudson, formed a Joint Utility CEO Certification Working Group (Joint Utilities). The Joint Utilities held weekly calls, discussed each other's due diligence, shared lessons learned throughout the process, and worked towards consistency and alignment. CECONY and O&R, along with the other NYS combination gas and utilities (Joint Utilities), participated in meetings with NYS DPS Staff, including the PSC General Counsel's office, to provide an overview of the CEO certification processes and to review the certification language.

Following these meetings, in early 2014, the official certification language was modified to provide clarification and in recognition of the realities associated with implementation. The certification language filed by the utilities states the following:

Pursuant to New York Public Service Law § 65(15), the undersigned, in his capacity as the Chief Executive Officer, certifies that to his knowledge, based on reasonable due diligence conducted by [COMPANY] (the "Corporation"), the Corporation has internal controls, policies and procedures designed to ensure material compliance with the requirements of the Public Service Law, including the obligation to provide safe and adequate service, and any rules, regulations orders and procedures adopted thereto (the "Requirements"). This certification pertains to any ongoing Requirements that were issued and effective on or before January 1, 2014.⁶ [Emphasis added]

The Joint Utilities provided the above draft certification language along with explanations of the terms "reasonable due diligence" and "material compliance" to the Commission. According to CECONY, the revised language was agreed to by the DPS General Counsel's office and the Joint Utilities. All of the Joint Utilities were directed by the Commission's Secretary, to use the agreed upon language for the purposes of the certification required under the law. This certification language has been used in the required filings with the Commission.⁷

The initial identification of CECONY and O&R requirements was managed by CECONY on behalf of both Utilities (CECONY and O&R).⁸ A Project Team consisting of a Project Manager, a Requirements Manager and at least one member from each Department of O&R and CECONY manages the process.⁹ The initial CECONY/O&R Project Team consisted of about 100 members.¹⁰ Team members worked with subject matter experts (SMEs) within the various Departments of CECONY and O&R. The Project Team is governed by a Steering Committee consisting of the current and any predecessor Project Managers, O&R's Vice President (VP) Operations and Director Ethics and Business Standards and the following CECONY management:

- Senior Vice President (SVP) and General Counsel;
- VP, Regulatory Services;

⁶ DR 15-B, Attachment 8

⁷ DR 307-B Attachment 1 Confidential Response, IRs 146-148, verification response

⁸ DR 15-B, Attachment 7 and IRs 83, 146 and 148

⁹ DR 15-B, Attachment 7 and IRs 146 and 148. For the 2014 Certification, the process was managed by the Law Department.

¹⁰ IRs 146 and 148

- Senior Associate General Counsel, Regulatory Services;
- SVP Customer Operations;
- VP and General Auditor; and,
- VP, Energy Policy and Regulatory Affairs.¹¹

The Steering Committee for the 2014 Certification consisted of 15 senior officers.¹²

Each Certifier relies on the certifications of the Sub-certifiers which are one level below him/her. Each CEO relies on the certification of the Tier 2 Sub-certifiers (the CEO's direct reports).¹³ The Tier 2 Sub-certifiers rely on the certifications of the Tier 3 Sub-certifiers (CECONY only¹⁴) who, in turn, rely on the certification of the Tier 4 Sub-certifiers. The Tier 4 Sub-certifiers are to rely on a review of their Department matrix which lists requirements and associated policies, procedures, controls, and on "reasonable inquiries of the Project Team Member for its Department, as well as other members of its Department who are reasonably believed to have knowledge of such matters."¹⁵

Pension and Other Post-Employment Benefits

The ability of private companies and public agencies to meet the financial obligations that result from pension and other post-employment benefits (OPEBs) programs is a major issue facing American organizations. The total amount of all pension investments in the United States was \$22.1 trillion in 2014.¹⁶ In the case of New York utilities, the cost of pension and OPEBs obligations affects ratepayers. As a result, CEI's plan asset management strategy has been included in the scope of this management audit.

The Consolidated Edison Retirement Plan (CERP) provides a defined retirement benefit for most employees of CECONY, O&R and some employees who transferred from CECONY to one of the CEBs.¹⁷ Management employees hired on or after January 1, 2001, and union employees hired on several later dates participate in the defined benefit pension plan under the Cash Balance formula which provides different benefits than the Final Average Pay formula. All employees, including those not covered by the defined benefit plan, are eligible to participate in a defined contribution plan named the Thrift Savings Plan, which is a 401(k).¹⁸ Employees who are covered by the Final Average Pay formula are eligible for a lower company match in the 401(k) than employees who are covered by the Cash Benefit Formula. OPEB funds are invested in several Voluntary Employee Benefits Associations (VEBAs). The 401(h) assets, which are an OPEB fund, are invested in the same trust as the defined benefit retirement funds.

As shown in **Exhibit III-2**, the pension investment trust, including the 401(h) OPEB assets, amounted to \$11.9 billion as of the end of 2014. Adding the VEBA trusts of \$0.8

¹¹ DR 15-B Attachment 7

¹² DR 307-B Attachment 1 (Confidential)

¹³ DR 15-B Attachment 7

¹⁴ Due to its size and position levels, O&R does not have Tier 3 Sub-certifiers.

¹⁵ DR 15-B, Attachment 7 (Corporate Procedure)

¹⁶ "Global Pension Asset Study 2015", Towers Watson

¹⁷ DR 777

¹⁸ DR 777

billion, results in a total of \$12.6 billion in assets that are managed under the CERP. The amount in the trusts that are managed under the CERP is as large as the entire amount of CEI shareholder equity which was \$12.6 billion in 2014.¹⁹ The Thrift Savings Plan, which is managed by individual beneficiaries not CERP, was \$3.3 billion.

Exhibit III-2
Consolidated Edison Retirement Assets Held in Trust
(Millions of Dollars)

	2011	2012	2013	2014
CERP Assets	\$ 7,809	\$ 8,783	\$ 10,761	\$ 11,503
401(h) Assets	344	358	372	358
Total Pension Trust Assets	\$ 8,153	\$ 9,141	\$ 11,133	\$ 11,861
VEBA Trusts	628	712	767	754
Total CERP and OPEB Assets	\$8,781	\$9,853	\$11,900	\$12,615
Thrift Savings Plan	2,537	2,701	3,067	3,259
Total Retirement Assets	\$ 11,318	\$ 12,554	\$ 14,967	\$ 15,874

Source: DR 686

The investment of corporate pension plans is governed by the Employee Retirement Income Security Act of 1974 (ERISA). When a plan is established, the plan document identifies individuals that are “Named Fiduciaries” for the plan. Named Fiduciaries are required under ERISA to discharge their duties with respect to the plan solely in the best interests of participants and beneficiaries.²⁰

The current Named Fiduciaries of the CERP are the Senior Vice President and Chief Financial Officer (CFO), Vice President of Human Resources, Corporate Accounting Vice President (Controller), President of O&R and Vice President of Construction. All of the Named Fiduciaries are employees of CECONY except for the President of O&R. The CFO serves as the Chairman of the Named Fiduciary Committee. On a regular basis, formal fiduciary training is provided to keep the fiduciaries informed of regulatory changes and trends in the oversight of defined benefit plans.

To provide for effective governance of the trust assets, CEI has established a multi-level structure. The governance structure has three components: company management, Named Fiduciaries as described above, and the CEI Board of Directors. Company management consists of three groups:

- The Treasurer and the Director of Pension Management under direction of the CFO have primary management responsibility for analyzing and reporting on trust assets.
- The Human Resources (HR) Vice President and the Director of Employee Benefits administer the benefit plans.

¹⁹ DR 4

²⁰ DR 776

- The Controller and the Assistant Controller oversee accounting and reporting of costs associated with the trusts.

The CEI Board, through its Management Development and Compensation Committee (MD&C), must approve the recommended allocation to asset classes. This allocation is based on an asset liability study performed every three to five years by an independent actuarial consulting firm. The actuarial firm analyzes projections of future expense and funding levels for alternative asset allocations together with expected future changes to the covered population and multiple combinations of economic conditions. After consultation with the Named Fiduciaries, the MD&C selects the asset allocation that provides the optimum balance of risk and return. The Named Fiduciaries have approved a set of written Guiding Principles and Practices to assist in management of the pension Assets.²¹

Management of the trust assets is performed by contracted money management firms that are selected to invest in a set of assets that, in total, meets the optimal asset allocation approved by the CEI Board after reviewing the result of the asset liability study. No funds are managed by any Company employees. The VEBA trusts for various OPEB programs are invested in passive investments such as market index funds because the smaller amount of funds in each trust do not warrant the expense of active management as is done with the pension trust.²²

B. EVALUATIVE CRITERIA

The evaluative criteria were taken from the final work plan and include both the Staff's evaluative criteria from the RFP and those added by NorthStar in its proposal.

- Is the structure and operation of the CECONY and O&R Boards and their Committees consistent with good practices?
 - Is the composition of the Board(s) and Committee Structure appropriate and are they functioning at an appropriate level?
 - Are the governance, organizational structure, missions and working relationships within O&R appropriate, particularly as they relate to the construction program planning process?
- Do the Board, executive and senior management exercise a suitable level of authority and responsibility over the budgeting process? (This topic is reviewed in Chapter V – Capital and O&M Budgeting)
 - Are the Boards, executive and senior management properly involved in the development of budgeting guidelines and periodic budget reviews and approvals?
 - Is the role of the O&R Board in the development of budgeting guidelines and periodic budget reviews and approvals appropriate?
 - Are the roles of the Board of Directors/Trustees and the executive and senior management in developing the budget appropriate?

²¹ DR 685

²² IR 174

- Do the guidelines, periodic budget review process and approval process support the roles of the Boards and senior managers?
- Are best practices related to performance and management shared effectively within and between CECONY and O&R?
- Do management and the Board of Directors/Trustees appropriately prioritize their attention between different business units: (CECONY and O&R, electric/gas/steam) (These subjects are covered in greater detail in Chapter IV – System Planning.)
 - Does the Board properly represent and address the interests of all customers and ratepayers in its monitoring of the organization and its decisions?
 - Are governmental and corporate initiatives (e.g., distributed generation, micro grids, energy efficiency initiatives, advanced metering, environmental mandates, etc.) incorporated appropriately into the short- and long-term system planning processes?
 - Are corporate practices related to: a) serving new loads from existing customers, b) adding new customers within the service territory, c) serving customers converting from oil to natural gas, and d) providing service to applicants outside the current utility service territory footprint, consistent with the Commission's rules and orders?
- Do the company's corporate objectives for emerging energy market initiatives? (This topic is also covered in detail in Chapter IV – System Planning)
 - Provide a basis for considering new market strategies?
 - Have an appropriate approach to competitive issues for new customers and markets such as natural gas expansion, natural gas vehicles, and in response to national, state and local regulatory trends?
 - Provide a basis to determine how the utility will provide funding for market entry and how it will evaluate the financial impact on the company, its investors and its customers?
 - Assist the utility in determining if entry into those markets will serve to help or hinder market and technological development and competition within those new markets?
- Do the processes used by the companies adequately support the CEO Certification that adequate internal controls, policies and procedures exist to ensure material compliance with the Public Service Law (PSL) and the Commission's regulations, policies and procedures as required in PSL §65(15)?
- Are the utility's Enterprise Risk Management (ERM) programs and processes adequate?
- Does the utility's pension and OPEB plan asset management strategy:
 - Result in an appropriate level of risk including the company's ability to meet its plan obligations?

- Include the utility's strategic plan asset allocation that results in appropriate diversification of plan funds?
- How does CEI, the parent, affect budgeting priorities and allocations among the companies and businesses in a positive manner?
- Do CECONY and O&R executive management use measurable goals to achieve the corporate mission and objectives? (This topic is covered in Chapter VIII – Performance and Results Management of O&R.)
- Overall, do the Boards exercise a suitable level of authority and responsibility?

C. FINDINGS AND CONCLUSIONS

1. The structure and operation of the CEI Board, its Committees and the subsidiary CECONY and O&R Boards are consistent with preferred industry practices.

- Meetings of the CEI Board of Directors are generally held jointly with the CECONY Board of Trustees (collectively the CEI/CECONY Board).²³ O&R Board meetings are held separately.
- The CEI/CECONY Board jointly held 13 meetings in 2014 and ten in 2015.²⁴ At the meetings it considered a wide variety of matters including strategic planning, its financial condition and results of operations, its capital and operating budgets, personnel matters, succession planning, risk management, industry issues, accounting practices and disclosure, and corporate governance practices.²⁵
- In accordance with CEI's Corporate Governance Guidelines, the Chair of the Corporate Governance and Nominating Committee serves as Lead Director and, as such, chairs the executive sessions of the independent Directors. The independent Directors²⁶ met twice in executive session and the non-management Directors (i.e., without John McAvoy who is considered a management Director) met ten times in executive session during 2014.
- Each incumbent member of the CEI Board must attend more than 75 percent of the combined meetings of the Board and of the Board Committees on which he or she served.
- The Corporate Governance and Nominating Committee has the authority under its charter to hire advisors to assist it in its decisions. The Corporate Governance and Nominating Committee often retains a professional search firm to assist it in identifying director candidates. The search firm assists in developing criteria for potential Board members to complement the Board's existing strengths and provides

²³ DRs 43 and 574 Confidential Responses

²⁴ DR 43

²⁵ Notice of 2015 Annual Meeting of Stockholders and Proxy Statement (held May 18, 2015)

²⁶ Excludes Mr. McAvoy and Ms. Futter

lists of potential candidates with background information for review and consideration. After consulting with the Corporate Governance and Nominating Committee, the firm screens and interviews candidates to determine their qualifications, interest, any potential conflicts of interest and provides its results to the Committee. The Committee also considers candidates recommended by stockholders. The Committee will make an initial determination as to whether candidates meet the criteria for Board membership. Stockholder recommendations for candidates, accompanied by biographical material for evaluation, are sent to the Vice President and Corporate Secretary.

- A professional search firm recently assisted the Corporate Governance and Nominating Committee in connection with its recommendation of Ms. Sanford.
- The MD&C Committee of the CEI Board recommends approval of Officer's compensation.
- The CEI Board, as a whole, should possess a combination of skills, professional experience, and diversity of backgrounds necessary to oversee the business of the CEI entities. In this regard, the CEI Board and the Corporate Governance and Nominating Committee consider the qualifications of Directors, Director nominees, the Board's overall composition as well as current and future needs. The Corporate Governance and Nominating Committee reviews with the CEI Board the skills and characteristics of nominees, including independence, integrity, judgment, business experience, areas of expertise, availability for service, factors relating to the composition of the CEI Board (including its size and structure), and the principles of diversity. For incumbent Directors, the Corporate Governance and Nominating Committee also considers past performance of the Director on the Board.

2. The caliber of all Board member resources is exceptional.

- The current Directors bring the benefit of exceptional qualifications, leadership, skills, and diverse experience and backgrounds that provide the Board with the skills and expertise to guide CEI's regulated utilities and CEBs.²⁷
- Directors have extensive executive management and other independent Board of Directors experience.
- The Directors' experience base is relevant and supportive of the utility mission including backgrounds in banking, finance, energy, manufacturing, utilities, healthcare, corporate law, telecommunications, education, arts and sciences.
- The Board's most recent addition has an extensive background in information technology, innovation and transformation as well as executive leadership.

²⁷ DR 30-B, NorthStar analysis and background research

3. Corporate Governance is effective and includes a number of preferred practices.

- CEI's corporate governance documents, including its Corporate Governance Guidelines, the Charters of the Audit, Corporate Governance and Nominating, and Management Development and Compensation Committees, and the Standards of Business Conduct, are well developed and readily available on CEI's website.²⁸ The Standards of Business Conduct applies to all Directors, officers and employees. CEI posts amendments to its Standards of Business Conduct and a description of any waiver from a provision of the Standards of Business Conduct granted by the Board to any Director or executive officer on its website within four business days after such amendment or waiver.²⁹
- The Board has adopted independence standards as defined in the New York Stock Exchange's listing standards to assist it in making consistent and precise determinations of Director independence, which are set forth in its Corporate Governance Guidelines.
- CEI/CECONY's leadership structure combines the roles of the chairman and chief executive officer. The Board believes that this leadership structure is appropriate for the Company due to a variety of factors, including Mr. McAvoy's long-standing knowledge of the Company and the utility industry, and his extensive engineering, financial, and operations experience.
- The Board has an independent Lead Director who is the Chair of the Corporate Governance and Nominating Committee. The Corporate Governance Guidelines provide that the Lead Director:
 - Acts as a liaison between the independent Directors and CEI's management.
 - Chairs the executive sessions of non-management and independent Directors and has the authority to call additional executive sessions as appropriate.
 - Chairs Board meetings in the Chairman's absence.
 - Coordinates with the Chairman on agendas and schedules for Board meetings, information flow to the Board, and other matters pertinent to CEI and the Board.
 - Is available for consultation and communication with major stockholders as appropriate.
- The Lead Director coordinates with the Chairman on agendas and schedules for Board meetings, information flow to the Board and other matters pertinent to the Company and the Board. Generally each Board meeting begins and ends with an executive session. This process promotes an efficient and timely exchange of sensitive and critical information without awkward or compartmentalized meetings/schedules.³⁰

²⁸ Web site at www.conedison.com/investor/governance_documents.asp

²⁹ Web site at www.conedison.com/investor/governance_documents.asp

³⁰ DR 43 Confidential Response

- The Board consists of a substantial majority of Directors who are independent – a preferred practice.
- The Board routinely holds executive sessions at which only non-management Directors are present. The independent Directors³¹ meet in executive session at least once a year – another preferred practice that improves perspective over management decisions.
- Pursuant to the CEI’s Corporate Governance Guidelines, the Board has oversight responsibility for reviewing strategic plans, objectives and risks. Each of the standing committees of the Board, other than the Executive Committee, is chaired by non-management Directors.
- The Board of Directors has affirmatively determined that the Directors listed in **Exhibit III-1**, other than Mr. McAvoy and Ms. Futter, are independent as defined in the New York Stock Exchange’s listing standards.
- The O&R Board of Directors meets six times per year. Its meetings are held separately from the CEI/CECONY Board.³²

4. Standing Committees of the CEI Board perform most of the business duties and bring their work product to the full Board.

- The CEI Board of Directors and the CECONY Board of Trustees have standing committees. The CECONY Board of Trustees comprises the same Board members as CEI and generally meets jointly. The O&R Board with three members, is chaired by the CEI Chairman and CEO. During each CEI Board meeting, the Presidents of CECONY and O&R provide operational status presentations.³³
- The Corporate Governance and Nominating Committee charter is reviewed annually and recommended changes are submitted to the Board.³⁴ All remaining committee charters are reviewed annually and recommended changes are submitted to the Corporate Governance and Nominating Committee and then to the CEI Board.³⁵
- **Audit Committee.** The Audit Committee, composed of five independent Directors is responsible for the appointment of the independent accountants for the CEI, subject to stockholder ratification at the Annual Meeting. The Audit Committee meets with the Company’s management, including CECONY’s General Auditor, the General Counsel, and the independent accountants, several times a year to discuss internal controls and accounting matters, the financial statements, filings with the Securities and Exchange Commission, earnings press releases and the scope and results of the auditing programs of the independent accountants and of CECONY’s internal

³¹ Excludes Mr. McAvoy and Ms. Futter

³² DRs 43 and 575 Confidential Responses

³³ DRs 43 and 575 Confidential Responses

³⁴ DR 567 Confidential Response

³⁵ DR 567 Confidential Response

auditing department. The Audit Committee also oversees the risk assessment and risk management policies and the Company's management of risks, relating to its duties and responsibilities that have been identified through the Company's enterprise risk management program. Each member of the Audit Committee is "independent" as defined in the New York Stock Exchange's listing standards. The Audit Committee held seven meetings in 2014. In Calendar Year ("CY") 2015, the Audit Committee held six meetings.³⁶

- **Corporate Governance and Nominating Committee.** The Corporate Governance and Nominating Committee comprises five independent Directors. The committee evaluates each member of the Boards individual performance annually, considers Director nominations for re-election and is responsible for recommending candidates to fill vacancies on the Board. In addition, the Corporate Governance and Nominating Committee assists with respect to the composition and size of the Board and of all Committees of the Board. The Corporate Governance and Nominating Committee also makes recommendations to the Board as to the compensation of Board members as well as other corporate governance matters, including Board independence criteria and determinations and corporate governance guidelines. The Corporate Governance and Nominating Committee held five meetings in 2014. The Committee held five meetings through July, 2015.³⁷
- **Environment, Health and Safety Committee.** The Environment, Health and Safety (EH&S) Committee, currently composed of three non-management Directors, provides advice and counsel to the Company's management on corporate environment, health and safety policies and on such other environment, health, safety, and sustainability matters as deemed appropriate. The EH&S Committee also reviews significant issues identified by management relating to CEI's environment, health and safety programs and its compliance with environment, health and safety laws and regulations. The EH&S Committee held five meetings in 2014. The Committee held four meetings in 2015.³⁸
- **Executive Committee.** The Executive Committee, composed of Mr. McAvoy, Chair, and currently three independent Directors, may exercise, during intervals between the meetings of the Board, all the powers vested in the Board, except for certain specified matters. No meetings of the Executive Committee were held in 2014 and 2015.
- **Finance Committee.** The Finance Committee, currently composed of four independent Directors, reviews and makes recommendations to the Board with respect to the Company's financial condition and policies, capital and operating budgets, financial forecasts, major contracts and real estate transactions, financings, investments, bank credit arrangements, its dividend policy, strategic business plan,

³⁶ DR 573 Confidential Response

³⁷ DR 573 Confidential Response

³⁸ DR 573 Confidential Response

settlement of litigation, and other financial matters. The Finance Committee held seven meetings in 2014 and six meetings in 2015.³⁹

- **Management Development and Compensation Committee.** The Management Development and Compensation Committee (the Compensation Committee), comprises five independent Directors. The Compensation Committee makes recommendations to the Board relating to officer and senior management appointments. The Compensation Committee also establishes and oversees the Company's executive compensation and welfare benefit plans and policies, administers its equity plans and annual incentive plan and reviews and approves annually all compensation relating to the Named Executive Officers under the Company's executive compensation program. The Compensation Committee held ten meetings in 2014, and five meetings in 2015.
- **Operations Oversight Committee.** The Operations Oversight Committee, currently composed of four non-management Directors, oversees the Company's efforts relating to operating systems, their impact on the customer, their compliance with laws and regulations and the corporate policies and procedures. The Operations Oversight Committee held five meetings in 2014. The Committee held four meetings in 2015.⁴⁰
- **Planning Committee.** The Planning Committee, composed of four non-management Directors (prior to May 2015), reviewed and made recommendations to the Board regarding long-range planning for the Company. The Planning Committee was dissolved effective May 2015, when the Board of Directors decided to address the Planning Committee's responsibilities directly at the Board level.⁴¹ The role of the Planning Committee was to review the Company's long-term business plans and strategic considerations. Previously, Board members that were not on the Planning Committee were invited to every Planning Committee meeting. In May 2015, when two of the four Committee members were retiring, the Board dissolved the Planning Committee and allocated the duties and responsibilities to the full Board.⁴² No changes were made to the charters of the other Board committees because the Board determined that the Guidelines already provided that the Board had "oversight responsibility for review of the Company's strategic plans, objectives and risks."⁴³ The Planning Committee held three meetings in 2014 and its last meeting was held February 19, 2015. As part of the October Board meeting, the full Board held a half-day planning session on October 21, 2015.

³⁹ DR 573 Confidential Response

⁴⁰ DR 573 Confidential Response

⁴¹ DR 567 Confidential Response

⁴² DR 569 Confidential Response

⁴³ DR 570

5. CEI, CECONY and O&R Boards along with management focus their attention on all business units and properly represent and address the interests of all customers.

- Strategic plans, corporate goals, and planning objectives are updated as part of Long-Range Planning (LRP) Processes and address all services and all customers.⁴⁴
- The annual budgeting process and five-year business planning process conducted from April to November each year cover all businesses and all customers.⁴⁵
- The CEI/CECONY and O&R Boards' annual planning process covers all business units and all customers when focusing on the following topic areas:⁴⁶
 - Customer and industry trends
 - Business strategy discussions
 - Long-Range Plan reviews
 - Business plans and near-term outlook
 - Finalize annual budget
 - Dividend discussions
- In addition to the annual planning and budgeting functions, management decision-making processes and functions such as the following cover all customers and businesses:⁴⁷
 - Corporate and operational performance
 - Committee reports
 - Financial reports
 - Reports on current regulatory environment and rate case proceedings
 - System performance
 - Law Department reports
 - Compensation issues
 - Authorizations to execute instruments and documents
- O&R Board focus topics covering all gas and electric customers specifically include:
 - Financial reports
 - Dividend to the parent company, CEI
 - Compensation
 - Electric and gas operations and performance
 - Customer service
 - Various authorizations
 - Regulatory issues and rate case proceedings

⁴⁴ DR 56-B Supplemental

⁴⁵ DRs 26, 161 and 221

⁴⁶ DR 229

⁴⁷ DR 43 Confidential Response

- In each of these cases, the Board’s focus is on all business units or each business unit is addressed and all customers are represented.
- 6. Governmental and corporate initiatives along with industry trends are included in CEI/CECONY and O&R Boards long range planning sessions albeit at a very high level. Discussions include topics such as renewable resources, distributed generation, micro grids, energy efficiency initiatives, advanced metering and environmental mandates.**
- In early 2014, six trends formed the basis of planning efforts:⁴⁸
 - Customers expect more information and customization,
 - Demand growth continues,
 - Public policy focus continues,
 - Upward cost pressure and regulatory scrutiny continue,
 - Technology advances occur and distributed energy resources grow, and
 - Investments continue with new participants and larger utilities.
 - In early 2015, seven trends provided the planning focus:
 - Delivered electricity and natural gas will be an increasing part of our customer’s lives and that of our economies.
 - Customers increasingly expect uninterrupted energy delivery, convenience and choice.
 - New York City’s economy and population continue to grow. Electric/gas peak demand and gas sales will increase. Electric sales will be relatively stagnant or decrease.
 - Technology advances and penetration of distributed energy resources will continue.
 - Policy and regulation continue to focus on safety, avoidance of large scale interruptions, clean energy, system efficiency, customer choice, promotion of competition, and affordability of delivered energy.
 - New participants emerge and the role of utilities change.
 - Consolidation within the energy delivery industry will continue.
 - In 2015, planning updates included:
 - Changes in commodity prices,
 - National distributed energy resources (DERs) experiences,
 - Renewable generation continued growth, and
 - New Environmental Protection Agency (EPA) carbon regulations.

⁴⁸ DR 229 Confidential Response

7. New loads and oil to gas conversions are included in the Board's long-range planning sessions and specifically within the CECONY/O&R New Business functions.

- CECONY developed a separate organization within Gas Operations in 2011 to address the anticipated rise in oil-to-gas conversion requests following the promulgation of regulations by the City of New York.⁴⁹ These regulations affect boiler operating permits under the purview of the New York City Department of Environmental Protection, but effectively ban (by 2030) the use of heavy heating oil within New York City for large residential and commercial establishments. The reduced cost of natural gas in recent years has also encouraged additional conversions from number two (No. 2) grade fuel oil throughout the CECONY service territory.⁵⁰
- Differences between the high occupancy, building-dense neighborhoods of Manhattan and large sections of the Bronx and the mostly residential areas of Queens, northern Bronx and Westchester County, requires tailoring to address the various constituencies within CECONY's marketing program. Large buildings are generally managed by a contracted firm and that firm may represent dozens or hundreds of buildings. Marketing to these buildings is generally conducted by meetings with the firm to address the entirety of the portfolio. Large, individually-owned buildings are generally visited by a sales representative following telephone solicitations. CECONY also contacts interested stakeholders such as the Master Plumbers Council (MPC), the Association of Boiler Burners and Installers (ABBI) and the real estate community through the Real Estate Board of New York (REBNY). Members of the Gas Conversion team also meet with elected officials on the state and local level, community boards, and other neighborhood associations. Interest in gas conversions remains high.
- Smaller residential homes are generally marketed to on an individual level. Potential customers receive a targeted mailing and are reminded that they have a potential to receive a rebate from CECONY if they comply with the terms and conditions of the program. CECONY also has a web-based tool for small (one to four family residential units) homes to determine the likelihood that they are located within 100 feet of an adequately sized main to serve them for gas heating purposes.⁵¹ This tool provides a savings calculator, answers to frequently asked questions, and resource links. CECONY also uses various customer outreach methods including customer bill inserts/newsletter and social media (such as Twitter and Facebook) to inform customers of conversion opportunities.
- CECONY petitioned the DPS for approval to amend the existing Tariff to enable the Area Growth program to support the NYC Clean Heat initiative.⁵² Gas Operations has developed area growth plans to market to oil users in a geographical area and support low-to-no cost conversions to natural gas while reinforcing the area to

⁴⁹ DR 1 – B Supplement 2 Attachment 2

⁵⁰ DR 105-C

⁵¹ www.conEd.com/gasconversions

⁵² DR 105-C Attachment 1 Area Growth

accommodate new heating demands. An overview of the growth zones is provided on CECONY's website.⁵³

- The CECONY Gas Conversion team handles every aspect of the conversion process in the New York City portion of the service territory other than the physical installation of the service line and the meter set, which is handled by Construction Management/Gas Construction and by the Gas Distribution Services (GDS) respectively. Customers in Westchester County currently work through the Energy Services team. Customers submit a work request to the company through an electronic portal. The submission generates a work request or case number and the case is reviewed by company personnel for completeness and accuracy before being assessed by the planning team. Depending on the complexity of the project, system analysis may be required before a service determination can be provided to the customer.
- Once the customer has been provided a service determination, they can proceed with the internal work required and the necessary CECONY inspections. Inspections must minimally include an initial field visit/point of entry meeting and a final inspection. Larger, complex projects also require an interim inspection. An interim inspection must be passed prior to the release of any work to the team that will physically install the new service. The conversion is completed when the gas heating rate designation is established in the Customer Information System. Customers receive correspondence that the work is complete and their case is closed.
- O&R New Business Project Managers market conversions from oil or propane to natural gas in various ways. Initial marketing interactions with customers include O&R's website, oru.com/convert, direct mailings, post cards, bill inserts, home/trade shows, community meetings and door-to-door solicitation.⁵⁴
- Areas within O&R's territory are reviewed and analyzed by New Business Services Project Managers to identify opportunities to provide natural gas to customers that are currently using oil or propane. O&R natural gas marketing identifies customers that are within their entitlement distance from the nearest natural gas main. In addition to expanding the natural gas system based on natural gas conversions, O&R's New Business Services Department works with the Gas Engineering Department to market natural gas to potential customers associated with facilities that are being upgraded, replaced or installed for reinforcement purposes. O&R's Public Affairs team and New Business Services personnel work with municipalities and communities to ensure natural gas main installation efforts coincide with planned roadway excavation and repairs, such as culverts being replaced or roadway resurfacing.
- O&R applications for natural gas service are assigned to a New Business Project Manager, responsible for assessing the customer's request for natural gas service and the system's capability to deliver the requested service. When necessary, the Project

⁵³ <http://www.coned.com/gasconversions/area-growth.asp>

⁵⁴ DR 105-O

Manager works with Gas Engineering to design any required distribution extensions and/or elevated pressure requirements that might be needed. If customer payments are required, after receipt, a road opening permit is secured from the municipality having jurisdiction and the Company facilities to be installed are scheduled for installation. The customer works with his/her plumber or heating, ventilating and air conditioning (HVAC) contractor to connect to the O&R gas distribution system, the local building official completes an on-site inspection and O&R sets a gas meter, initiating natural gas service.

8. CECONY and O&R address emerging energy market initiatives through long-range planning rather than through their corporate objectives.

- The corporate vision is: to be a premier provider of safe, reliable, clean, innovative, cost-effective energy services and solutions that enhance the lives of our customers.⁵⁵ The vision is expressed in four distinct but interconnected corporate objectives:
 - Mitigate customer bill impacts,
 - Improve customer service,
 - Meet governmental and our own internal environmental standards, and
 - Maintain reliability and safety.
- Achieving the vision will require the Companies to make significant capital investments over the next 20 years. The long-range plan addresses several subject areas to achieve that vision by investing strategically while mitigating increases in customers' energy bills.
- In projecting the evolution of the energy industry landscape the companies consider a broad range of variables including energy demand drivers, policy and regulatory efforts, technology evolution, infrastructure condition, and customer expectations. The outlook is based on the following major trends:
 - Energy use will continue to grow;
 - Customers will change the way they interact with us;
 - Environmental focus will continue; and
 - Technology advances will occur and distributed resources will grow.

9. O&R and CECONY generally operate as two distinct and separate utilities; however, recent efforts have been made to improve coordination.

- O&R and CECONY's operations are not merged. They each maintain separate call centers, field operations work forces, and separate engineering, construction and maintenance crews.
- Policies, procedures and work practices differ as discussed throughout the report.
- Recent examples of the sharing of best practices include:

⁵⁵ DR 95-C Attachment 4

- O&R's adoption of the capital budget optimization process developed by CECONY.
- Primavera - P6 project control systems implementation coordination.
- Involvement of both Utilities in the REV proceeding.
- Coordination as it relates to the digital customer experience project and the Enhancing Customer Relationships training.
- HR Payroll.
- Oracle.
- Supply Chain.
- Energy Forecasting.
- Planning process.

10. CEI's Enterprise Risk Management (ERM) program and processes are adequate.

- ERM is the process through which a corporation's Board and management teams identify the risks faced by the company, quantify and prioritize those risks, and proactively undertake activities to mitigate or manage those risks. Organizations will and should pursue a variety of risk mitigation strategies depending on the size, type and potential impact of the various risks. As in any organization, the risks – financial and operational – associated with decisions and the options for managing those risks should be a clear part of corporate decision-making.
- CEI established a formalized risk management program in 2004. The ERM program conforms to standards established by the Committee of Sponsoring Organizations (COSO) of the Treadway Commission.⁵⁶
- The ERM program is guided by CEI's Board and designed and executed by management. The program includes all operating companies of CEI. The process considers risk at the corporate and department levels. Corporate-level risks are reviewed quarterly by the ERM Risk Committee. Department risks are reviewed annually. The Risk Committee consists of General Manager and Director-level personnel across all units of CEI. The CEI ERM Steering Committee is chaired by the CFO and includes Senior VP's from key operating areas, the General Counsel and the Chief Ethics and Compliance officer. The Corporate Leadership Team (CLT) provides overall guidance to the ERM program.⁵⁷
- Each September the ERM team compiles the annual ERM Report. This report is provided to the Board in October.
- The ERM team benchmarks its efforts through its participation in the ERM Utility Roundtable and the Edison Electric Institute (EEI) ERM Task Force.

⁵⁶ DR 44

⁵⁷ CEO of CEI, President of O&R, President of Shared Services, General Auditor and the General Counsel.

11. CECONY/O&R have developed appropriate processes for identifying the requirements that form the basis for the CEO Certification, and the associated policies, procedures and controls.

- According to CECONY and O&R, the objective of the CEO Certification was to identify the regulatory requirements and associate policies, procedures and controls with the requirements.⁵⁸
 - To identify the initial list of regulatory requirements covered under PSL §65(15), the Joint Utilities Working Group retained two outside law firms to provide an inventory of all requirements applicable to two or more of the joint utilities.⁵⁹ The outside law firms reviewed the PSL, New York Code of Rules and Regulations (NYCRR) and the Orders available on the PSC's website.
 - To supplement this effort, CECONY retained separate outside counsel (on behalf of CECONY and O&R) to identify any requirements specific to CECONY and/or O&R.⁶⁰ CECONY/O&R personnel also identified any known requirements.
 - The various lists of requirements were reconciled, resulting in about 5,000 identified requirements for each utility.⁶¹
- The CECONY/O&R departments responsible for each of the requirements identified the policies, procedures or other controls in place to ensure material compliance with each requirement.⁶² Each department has its own inventory (referred to as matrices) outlining the requirements and the associated policies and procedures or other controls.⁶³
- The departments also developed whitepapers which delineate the roles and responsibilities of the organization and describe in general terms some of the hard and soft controls.⁶⁴
- On an ongoing basis, attorneys within CECONY's Regulatory Services Department identify new or modified requirements which will be ongoing and effective as of January 1 of the next certification year. These requirements are provided to the CECONY Requirements Manager who functions as the keeper of the requirements.⁶⁵ These are assigned to the appropriate CECONY and O&R department and added to that department's matrix. The departments then identify the associated policies, procedures or controls.

⁵⁸ IRs 146, 148, 156, 157, 209, DR 15-B and associated matrices (DRs 237-C (Confidential) and 295-B (Confidential))

⁵⁹ IRs 146 and 148, July 7, 2014 Certification in accordance with Case 14-G-0212 - Proceeding on Motion of the Commission to Investigate the Practices of Qualifying Persons to Perform Plastic Fusions on Natural Gas Facilities

⁶⁰ DRs 15-B Attachment 7, 237-C (Confidential), 307-B, IRs 83, 146 and 148

⁶¹ IRs 146 and 148, DRs 237-C (Confidential) and 307-B

⁶² DR 237-C (Confidential)

⁶³ DR 15-B Attachment 7, IRs 146 and 148

⁶⁴ DR 295-B (Confidential)

⁶⁵ IR 155

- The utilities use a standard of reasonable due diligence for the identification of requirements. This is defined as items the utilities are aware of and anything on the PSC website.⁶⁶
- In CY 2014, CECONY/O&R identified 82 new requirements that must be certified to by the CEO under PSL §65(15). These new requirements originate from Cases 13-E-0030, 13-G-0031, and 13-S-0032 (CECONY Rate Case); 13-E-0573 (CECONY Demand Response Program Revisions); 11-G-0565 (In the Matter of a Natural Gas Incident at 198 Joseph Street, Horseheads, on January 26, 2011); 12-M-0476 (Residential and Small Non-residential Retail Energy Markets); 14-E-0151 (Increase to the Net Metering Minimum Limitation at Central Hudson Gas & Electric); 14-E-0422 (Clarify the Process for Utilities to Seek Relief from Net Metering Caps); and PSL §66(J) (Net Metering).⁶⁷ NorthStar selected a sample of the requirements and found them to be included in the respective matrices for the 2014 Certification provided in March 2015.⁶⁸
- As of October 23, 2015, CECONY/O&R had identified 25 new requirements for the March 2016 Certification, including the changes to 16 NYCRR resulting from the East Harlem incident.
 - 14-G-0357 (Amendment to 16 NYCRR Part 255 Gas Safety) and 14-G-0212 (plastic fusions and leak surveys)
 - 14-M-0101 (REV)
 - 11-G-0565 (Horseheads – April 17, 2015 Order)
 - North American Electric Reliability Corporation (NERC) Standards PRC-005-2 (Bulk Electric Systems Protection System Maintenance), PRC-006-NPCC-1 and PRC-006-2 (Automatic Underfrequency Load Shedding), CIP-014-2 (Transmission Physical Security), NUC-001-3 (Nuclear Plant Interface Coordination).⁶⁹

12. Validation of controls is not the objective of the CEO Certification process.

- Whether the controls are adequate and functioning as intended is considered distinct and separate from the CEO Certification process. Ensuring controls are operating as intended is considered the responsibility of the various operating departments. CEO Certification Team Members were not asked to verify whether controls are functioning as intended.⁷⁰
- For some requirements there may be system controls; however, in general, controls primarily consist of policies and procedures.⁷¹

⁶⁶ DR 15-B Attachment 7, IRs 146 and 148

⁶⁷ DR 525-B (Confidential)

⁶⁸ DR 525-B (Confidential), DR 296, and DR 237-C (Confidential)

⁶⁹ DR 526-B (Confidential)

⁷⁰ IRs 146, 148, 156, 157 (Sub-certifier)

⁷¹ Review of certification matrices (DR 237-C (Confidential)), DR 307

- There is no requirement that a procedure address all elements of the requirement with which it is associated, and some do not have a monitoring element.⁷² Some procedures do not address the specific regulations with which they have been associated.⁷³
- According to the Utilities, the certification that the Company is required to submit to comply with PSL §65(15) “is a certification that, based on reasonable due diligence, the Company has internal controls, policies and procedures designed to ensure material compliance with the requirements of the PSL and associated rules, regulations, orders and procedures. PSL §65(15) does not require testing or auditing of the internal controls, policies, and procedures identified in connection with the certification required under the statute, or otherwise ensuring that they are functioning as intended.”⁷⁴

13. While there are a number of organizational units reviewing processes, procedures and controls, there are opportunities for improvement in the feedback loop between the quality assurance reviews and audits and the CEO Certification process.

- CECONY’s Internal Audit Department performs audits on behalf of CECONY and O&R. The audit scope will include compliance with regulatory requirements where applicable.⁷⁵ In CY 2014, Internal Audit performed about 140 audits including Environmental Health and Safety reviews.⁷⁶ For the utilities this is the first line of defense in ensuring compliance with regulatory requirements.
- Eleven CECONY organizations have Quality Assurance (QA) Groups, including customer operations, electric and gas operations, construction, and shared services; however, the managers in charge of these groups are not necessarily members of the CEO Certification Project Team and there is no required feedback loop.⁷⁷
 - As an example, CECONY’s Construction Quality Assurance Department reviews work performance and completed work to verify compliance and identify areas for improvement.⁷⁸ There is no direct interface between the Construction QA Manager and the Construction CEO Certification Lead.⁷⁹
 - CECONY’s Gas Compliance and Quality Assessment organization⁸⁰ (within Gas Operations) performs inspections of Gas Operations work to review work quality; verify compliance with specifications, procedures and recommendations; perform

⁷² NorthStar review of selected procedures.

⁷³ In particular, CECONY’s Customer Operations procedures.

⁷⁴ DRs 546-B, 545-B and 547-B

⁷⁵ DRs 41-B (Confidential) and 260-B (Confidential) Review of Internal Audit Reports

⁷⁶ DR 41-B (Confidential)

⁷⁷ DR 528-C, IR 168 and IR 209

⁷⁸ DR 295-B (Confidential) Attachment 75, DR 662 and IR 168

⁷⁹ IRs 168 and 209

⁸⁰ Gas Compliance & Quality Assessment was formed in January 2015. Quality Assurance was moved from Gas Engineering to the newly formed organization.

process reviews, deep dives and incident reviews; and, provide compliance assistance to Gas Operations.⁸¹

- CECONY Customer Operations conducts about 130 annual reviews addressing each of the Customer Operations functions: Customer Assistance, Field Operations, Specialized Activities; Strategic Applications, and Centralized Credit.⁸²
- Beginning in early 2014, one individual within O&R's Customer Operations function performs periodic reviews of the Customer Operations controls.⁸³ There are over 1,000 Customer Operations regulatory requirements.⁸⁴ O&R has a Quality Assurance Department that performs quality reviews on Gas and Electric Distribution and Transmission, including construction, engineering and other related departments.⁸⁵ There are also Compliance Managers within the Gas and Electric organizations.⁸⁵ O&R's Gas Compliance and Damage Prevention Organization was formed in January 2015. Compliance does not have oversight of the CEO Certification process; however, the Compliance Manager is on the CEO Certification team.⁸⁶ Engineering develops the policies and procedures. Compliance takes the specifications and procedures and ensures they are aligned with the code. They also perform compliance reviews.⁸⁷ The O&R Gas and Electric Project Management Group has a Quality Assurance function that performs additional reviews. They performed 13 reviews in 2014.⁸⁸
- In January 2015, CECONY created a Compliance Management Group within Business Ethics and Compliance.⁸⁹ This group is not intended to be an audit function, but to work with the various CECONY and O&R Departments to implement a comprehensive compliance management process and facilitate self-assessments. The group focuses on PSC requirements, EH&S, and engineering codes and standards. The CEO Certification Project Team now reports to this group.⁹⁰

14. Potentially varying interpretations of the CEO Certification requirements pose a risk to the Utilities.

- Each CEO certifies to the following:

Pursuant to Public Service Law §65(15), the undersigned, in his capacity as the Chief Executive Officer, certifies that, to his knowledge, based on reasonable due diligence conducted by [CECONY or O&R] (the "Corporation"), the Corporation has internal controls, policies and procedures designed to ensure material compliance with the requirements of the Public Service Law, including the obligation to provide safe and

⁸¹ DR 295-B (Confidential) Attachment 84, DR 654-C and IR 167

⁸² DR 296-B Attachment 3, IR 169

⁸³ IR 83, DR 521

⁸⁴ DR 296-B Attachments 1 and 2 Confidential Response

⁸⁵ DR 316-O

⁸⁶ IRs 172, 205 and 207 (combined interview)

⁸⁷ IRs 172, 205 and 207 (combined interview), DR 749-O, Attachment 2

⁸⁸ IRs 172, 205 and 207 (combined interview), DR 749-O, Attachment 1

⁸⁹ IRs 146, 147, 148 and 79

⁹⁰ IRs 79, 146 and 148, DR 657-B

adequate service, and any rules, regulations, orders, and any rules, regulations, orders and procedures adopted thereto (the “Requirements”).⁹¹

- As described previously, the validation of controls is not part of the CEO Certification requirement.
- The DPS Staff may have a differing interpretation of the requirement.
- In the event of a significant incident the signed certifications and associated language represent a potentially significant exposure for the utilities.

15. CEI’s management strategy for pension and other post-employment benefits results in an appropriate level of risk including the ability to meet its plan obligations.

- The level of risk a plan provides is determined by the allocation of its assets by type of investment. The higher the percentage of investment in equity, the higher the level of risk the plan embodies. Conversely, the higher the percentage of fixed income investments, the lower the level of risk the plan embodies. The investments that lead to higher returns also generally lead to higher risk. And, the investments with lower returns generally lead to lower risk.
- The higher the return from the plan’s assets, the lower the amount of company contributions that are required to meet plan obligations and, therefore, the lower the amount that needs to be charged to customers in rates.
- Generally, there is no ideal mix of assets. Rather, CEI must weigh the benefit of higher returns against the higher risk associated with those returns. CEI has chosen to minimize ratepayer costs, with lower expense and contribution requirements by selecting an asset allocation of 60 percent equity.
- Companies are not required to report the risk implied by their asset liability studies. However, they are required to report their asset allocation. The asset allocations indirectly indicate the risk of the plan. The asset allocation chosen by CEI is within the range of other large utilities and manufacturing companies as shown in **Exhibit III-3**.

**Exhibit III-3
Trust Asset Allocation 2014**

	CEI	Exelon	PG&E	SCE	PSE&G	GE
Equity	58%	56%	23%	48%	71%	57%
Fixed Income	32%	37%	63%	52%	26%	37%
Real Estate	10%	7%	9%	0%	0%	6%
Other	0%	0%	5%	0%	3%	0%
Total	100%	100%	100%	100%	100%	100%

Source: DR 4-B Attachment 5 page 105, Form 10-K of each listed company

⁹¹ March 4, 2015 CEO Certifications (DR 15-B, Attachment 7)

16. The pension trust governance structure results in a significant overlap of responsibilities.

- **Exhibit III-4** describes the pension trust's governance structure. The CFO, Controller and VP HR supervise all of the management personnel involved in governance of the Trust, they are three of the five members of the Named Fiduciaries Committee (NFC), one of them is the Chair of the NFC and they attend most meetings of the MD&C Committee of the Board. It would be difficult to replace these senior executives because of their significant relevant experience and specific knowledge related to financial management. Also, any outsider would face significant personal liability exposure.

Exhibit III-4
Members of Pension Governance Groups

Management	Named Fiduciaries	MD&C Committee
CFO	CFO (Chair), CECONY	Attends most meetings
Treasurer		
Dir. Pension Mgt.		
Controller	Controller, CECONY	Attends most meetings
Assistant Controller		
VP HR	VP HR, CECONY	Attends most meetings
Dir. Employee Benefits		
	VP Construction, CECONY	
	CEO, O&R	
		George Campbell, Jr. (Chair)
		Vincent Calarco
		Michael Del Guidice
		John Killian
		L. Fredrick Sutherland

Source: DRs 1, 30, 573-C Confidential Response, 776

17. The utility's strategic plan for asset allocation results in appropriate diversification of plan funds.

- The Trust has followed the asset allocation set forth in the 2011 Asset Liability Study (ALS) as shown in **Exhibit III-5** below.
- The changes to reflect the 2011 ALS allocations only began to be implemented in 2012. The largest deviation in asset allocation is in Equity which, in 2014, was 2.7 percent below the ALS target. However, equity was on target in each of the two previous years.⁹² The Board adopted an increase in allocation to real estate from 8 percent to 10 percent which explains the increase in that category.

⁹² DR 744 Attachment 11

Exhibit III-5
Asset Allocation of Pension Trust
(Percent of Total)

Asset Class	ALS ⁹³	2011	2012	2013	2014
Domestic Equity		30.5%	27.9%	25.6%	25.5%
International Equity		30.7%	31.7%	33.3%	30.7%
Private Equity		0.0%	0.3%	0.8%	1.1%
Total Equity	60%	61.2%	59.9%	59.7%	57.3%
Fixed Income	30%	30.6%	29.8%	28.8%	31.7%
Real Estate	10%	7.0%	8.8%	9.5%	9.6%
Cash		0.8%	0.8%	1.0%	0.4%
Rebalancing Manager		0.4%	0.7%	1.0%	0.9%
TOTAL PENSION TRUST	100%	100.0%	100.0%	100.0%	100.0%

Source: DR 686

18. In addition to appropriately managing the funds to meet known obligations, CEI has been proactive in reducing the future demands that will be placed on the funds.

- Prior to 2001, all management employees of the utilities qualified for a defined-benefit pension known as the Final Average Pay and Career Average pay formula. Management employees hired on or after January 1, 2001 and union employees hired on several later dates were eligible to participate in the defined benefit pension plan under the Cash Balance formula which provides different benefits than the Final Average Pay formula. All employees are eligible for the Thrift Savings Plan, a 401(k) defined contribution plan. Union employees who were members of Locals 3 and 503 hired on or after January 1, 2010, and employees who are members of Local 1-2 hired on or after July 1, 2012, also were eligible for the Thrift Savings Plan but not the defined benefit plan.⁹⁴
- CEI also made changes to the Final Average Pay program benefits that reduce its future obligation. For management employees covered under the CECONY Final Average Pay pension formula, two changes were made effective January 1, 2013, that reduce plan costs attributed to subsidies provide for early retirement that are available at age 55 and the free 50 percent Joint and Survivor spousal benefit provided to married employees who retire after January 1, 2013. These two changes reduce future liabilities and annual pension costs for certain employees who were under age 50 as of January 1, 2013. Both Final Average Pay pension formula changes apply to prospective benefits earned from January 1, 2013, until retirement.⁹⁵
- CEI has also modified its OPEB programs in order to reduce future obligations. For example, in 2008 CEI capped its contribution to retirees' health program at 78.4

⁹³ DR 774 Attachment 11

⁹⁴ DR 777

⁹⁵ DR 777

percent plus annual Consumer Price Index increases. The effect of this has been to reduce the Company's proportion of the cost of retiree health benefits to 68.8 percent.⁹⁶ In 2013, the Company also eliminated the retiree health subsidy for employees under the Cash Balance Pension formula.⁹⁷

D. RECOMMENDATIONS

1. Increase the level of sharing of best practices between O&R and CECONY by developing a protocol, and explore additional opportunities for potential cost savings resulting from standardized process or economies of scale.
2. Regarding the CEO Certification process:
 - Develop appropriate processes to disseminate modifications or updates to policies, procedures and controls as a result of Internal Audits and QA reviews to the appropriate CEO Certification representative in order to update matrices as required.
 - Individuals performing Internal Audits and QA reviews should be aware of the CEO Certification policies, procedures and controls that may be within the scope of the planned review.
 - On a going forward basis, using a risk-based prioritization process, revisit critical policies, procedures and controls to determine whether they properly address the requirements to which they have been assigned and correct any deficiencies. Consider adding monitoring requirements to safety-related procedures.
3. DPS and the Joint Utilities should meet to clarify all parties' understanding of the requirements of the CEO Certification process.
4. Replace one or more of the Named Fiduciaries with other employees not directly involved in management of the Consolidated Edison Retirement Plan Trust. The replaced officers, CFO and Chief Accounting Officer, could still provide his/her expertise as the senior officer in his/her area of responsibility. The newly appointed officers could meet the obligations of Named Fiduciaries and draw on the expertise of the senior officers who now serve as Named Fiduciaries.

⁹⁶ DR 389 Attachment 2

⁹⁷ DR 46-B Supplement 2, Attachment 1

IV. SYSTEM PLANNING

This chapter describes the results of NorthStar's review of the system planning functions of CECONY and O&R. The audits of CECONY and O&R system planning are based on the Final Work Plan approved by the Department of Public Service (DPS) Staff, which concentrates on the following subject areas:

- Electric/Gas/Steam system planning and decision-making,
- System reliability,
- Gas pipeline safety and regulatory compliance,
- The Public Service Commission's (PSC) Reforming the Energy Vision, and
- Supply Chain support to capital programs and projects.

NorthStar's findings and conclusions are generally presented in this same order.

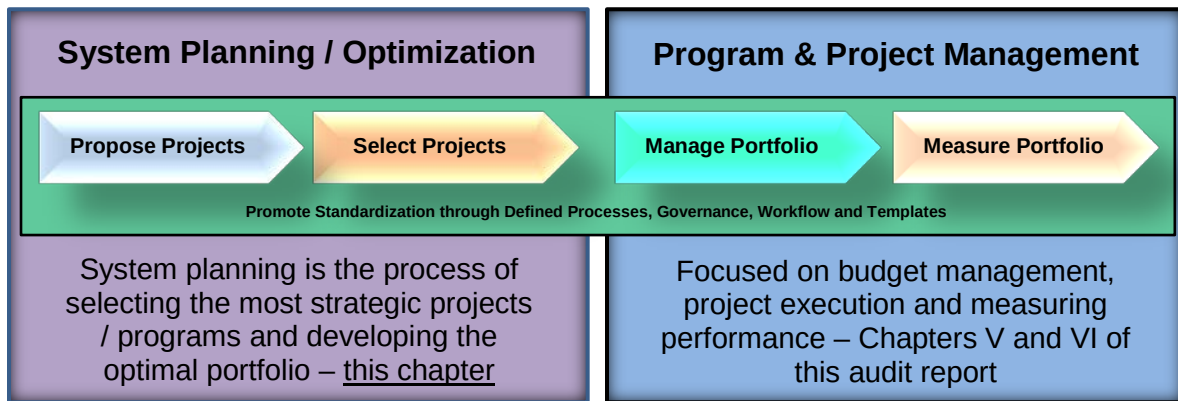
A. BACKGROUND

The primary objective of system planning is to satisfy demand and delivery requirements while maintaining a high level of reliability at the lowest cost. For many years, increasing demand and system growth provided a natural advantage and funding source for ongoing reliability enhancements. More recently, aging infrastructure, natural disasters, resource conservation, energy efficiency programs, and a reduction in customer growth and sales growth due to economic slowdown and more competitive alternative providers have all combined to increase the need for up-to-date, accurate and dynamic system planning.

Proper system planning integration should produce an optimal investment roadmap for all stakeholders, including ratepayers and the utility. It should guide the utility in meeting its reliability, safety, and load objectives at the lowest overall cost.

The adequacy of system planning must be evaluated independently for each utility service (natural gas, electricity and steam), service area (within CECONY and O&R) and for the area as a whole taking account of reliability, regulatory, and demand requirements. A thorough, well-designed system plan is critical to making cost-effective decisions. The plan should identify existing and potential system reliability deficiencies, estimate the likely cost of improvements and evaluate economic trade-offs. This is illustrated in **Exhibit IV-1**.

Exhibit IV-1 CECONY and O&R System Planning and Management Overview



Source: DR 280-B Attachment 1

CECONY’s energy delivery system is one of the most heavily relied upon in the world, serving national and international financial and media centers, a critical infrastructure of tunnels and subways, and more hospitals per square mile than any other city in the world.¹ While CECONY has a very dense, urban service area, O&R is more suburban and rural. A summary of CECONY and O&R operating statistics for electric, natural gas and steam services is shown in **Exhibit IV-2**. O&R’s electric and gas services represent one-tenth of CECONY’s in many areas.

Exhibit IV-2 CECONY and O&R Operating Statistics

	CECONY	O&R
Electric Customers	3,400,000	228,000
Gas Customers	1,100,000	132,000
Steam Customers	1,700	None
Natural Gas Sales (Million-decatherms)	156,393	25,305
Electricity Sales (Gigawatt-hours)	57,015	5,736
Steam Sales (pounds)	21,919,000	None
Service Territory (square miles)	660	1,350
Natural Gas Pipeline (miles)	4,348	1,876

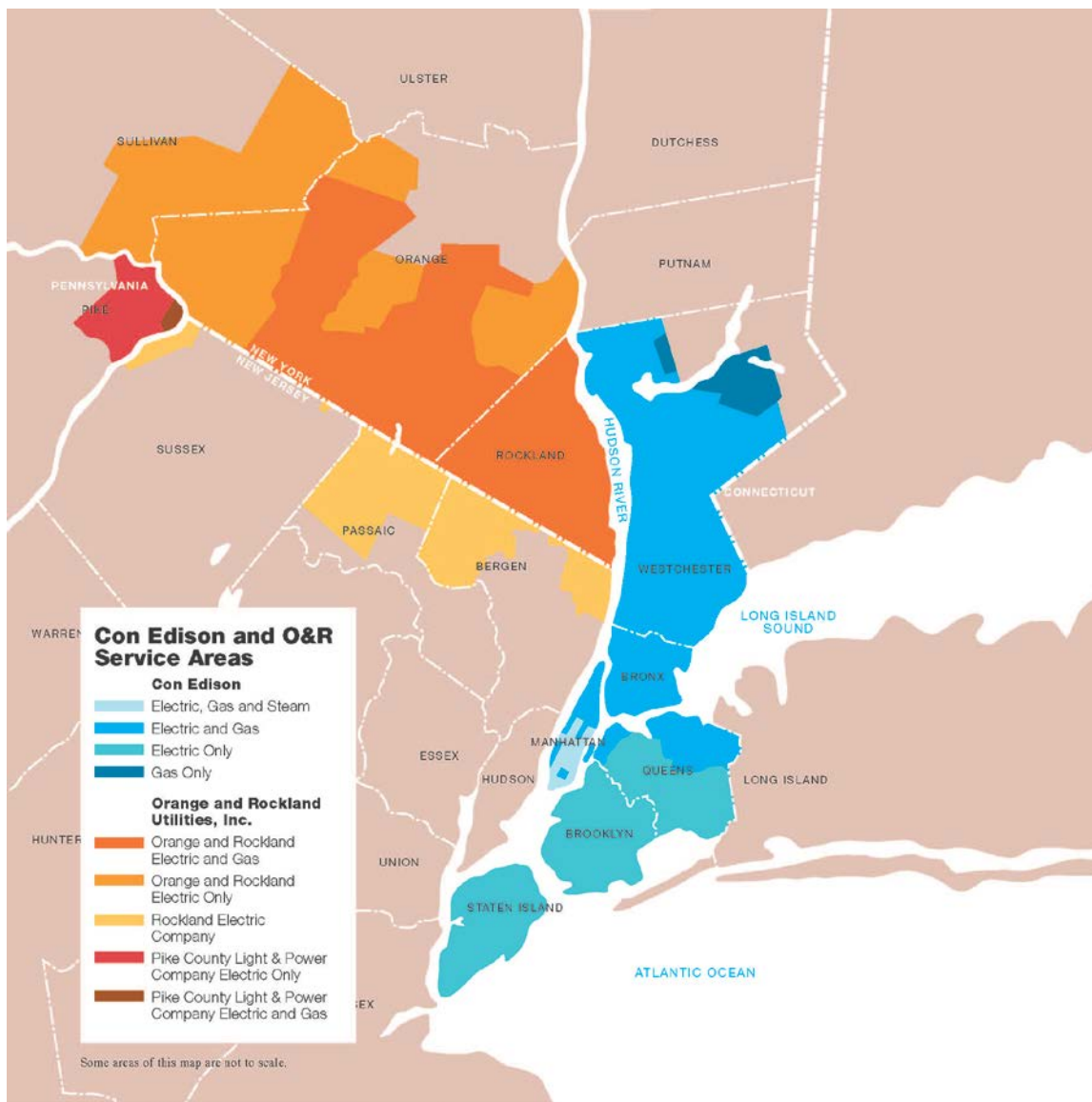
Source: DR 20 and Consolidated Edison, Inc, Form 10-K, 2/18/16

CECONY and O&R service territories **are shown in Exhibit IV-3.**²

¹ DR 56-B

² DR 885

Exhibit IV-3 CECONY and O&R Service Territories



Source: DR 885.

Electric Systems

CECONY provides electric services to approximately 3.4 million customers in New York City's five boroughs (Manhattan, Bronx, Queens, Brooklyn and Staten Island, with the exception of the Rockaway Peninsula in Queens) and parts of Westchester County, an approximately 660 square mile service area with a population of more than nine million.³ CECONY's electric transmission and subtransmission system comprises 438 miles of

³ CEI Form 10-K page 13 filed 02/18/2016

overhead circuits and 749 miles of underground circuits. The distribution system consists of 97,286 miles of underground distribution cable and 36,929 miles of overhead lines.⁴

CECONY's electric energy delivery systems are classified into three major categories: (1) the transmission system, (2) subtransmission and area substation; and (3) the distribution system. CECONY also has a small portfolio of facilities that generate electric power. CECONY's transmission and subtransmission system uses voltages of 500 kV, 345 kV, 138 kV, and 69 kV. CECONY has transmission interconnections with National Grid (Niagara Mohawk Power Company), Central Hudson Gas and Electric, O&R, New York State Electric and Gas Corporation, Northeast Utilities, Long Island Power Authority, New York Power Authority, and Public Service Electric and Gas Company (PSE&G). CECONY has six interconnections with PSE&G at the New York-New Jersey state line:

- The 230 KV overhead transmission line between PSE&G's Linden substation in Linden, New Jersey and CECONY's Goethals substation on Staten Island;
- Two underground-underwater 345 kV transmission lines between PSE&G's Hudson generating station in Jersey City, New Jersey and CECONY's Farragut substation in Brooklyn, New York;
- The 500 kV overhead transmission line between CECONY's Ramapo substation in Rockland County, New York and PSE&G's facilities in Branchburg, New Jersey and
- Two 345 kV transmission lines between the Ramapo substation and PSE&G's facilities in Waldwick, New Jersey (via the South Mahwah substation).⁵

CECONY owns and operates approximately 62 area distribution substations,⁶ 64 supply networks and 19 non-network load areas. The distribution system is composed of network and non-network system operating at voltages 33 kV, 27 kV, 13 kV and 4 kV. CECONY's underground distribution system is the largest underground system in the United States⁷, it includes approximately 264,000 manholes⁸ and service boxes; 97,286 miles⁹ of underground cable¹⁰ and 35,000 underground transformers.¹¹ Approximately 2.5 million of CECONY's customers are connected to networks. The networks provide high levels of reliability to Manhattan, Brooklyn, the Bronx and portions of Queens. The remaining customers are connected to a radial distribution system.¹²

CECONY manages its electric distribution system separately in four regions: Westchester/Bronx, Manhattan, Staten Island and Queens/Brooklyn. Each of these regions

⁴ CEI Form 10-K page 19 filed 02/18/2016

⁵

<http://investor.conedison.com/mobile.view?c=61493&v=202&d=3&id=aHR0cDovL2FwaS50ZW5rd2l6YXJkLmNvbS9maWxpbmcueG1sP2lwYWdlPTcyMTQ0MCZEU0VRPTEmU0VRPTUmU1FERVNDPVNFQ1RJTO5fUEFHRSZleHA9JnN1YnNpZD01Nw%3D%3D> updated for current corporation names.

⁶ CEI Form 10-K page 19 filed 02/18/2016

⁷ CEI Form 10-K page 19 filed 02/18/2016

⁸ http://www.coned.com/newsroom/energysystems_electric.asp

⁹ CEI Form 10-K page 19 filed 02/18/2016

¹⁰ CEI Form 10-K page 19 filed 02/18/2016

¹¹ http://www.coned.com/newsroom/energysystems_electric.asp

¹² Case 13-E-0030, CECONY Electric Rates, CECONY's Report on 2014 Performance under Electric Service Reliability Performance Mechanism (filed 03/31/15), p. 11

operates as a somewhat autonomous distribution utility responsible for capital planning and project implementation.

O&R, RECO and Pike electric transmission and distribution facilities include 547 circuit miles of transmission lines, 14 transmission substations, 62 distribution substations, 86,794 in-service line transformers, 1,889 miles of underground distribution lines, and 3,994 pole miles of overhead distribution lines.¹³ O&R's electric service territory is divided into three operating divisions: the Eastern Division (Rockland County, New York and North Bergen County, New Jersey), the Central Division (Orange County, New York and portions of Passaic County, New Jersey) and the Western Division (Orange and Sullivan Counties in New York, and Pike County, Pennsylvania). O&R's major ties with the 345 kV bulk electric system include five 400 MVA, 345/138 kV step down transformers, one 115 kV inter-Company tie line with Central Hudson Gas and Electric Corporation in New York, and one 400 MVA, 345/138 kV step down transformer in New Jersey. O&R's sub-transmission system operates at 138 kV and 69 kV.¹⁴

Natural Gas Systems

The basic components of a utility's natural gas system include:

- Transmission Pipeline – Transmission pipelines operate at pressures greater than 125 psi. Transmission pipeline is typically 6 inches to 30 inches in diameter and constructed of high strength steel.
- Distribution Main – Distribution main lines serve districts or areas within the service territory. Distribution main is constructed of cast iron, unprotected steel, cathodically protected steel and plastic pipe.
- Distribution Service – Distribution service lines run from the main line to the customer meter. They can range in size from one-half inch to several inches in diameter, depending on the customer's demand requirements. Distribution service pipelines are constructed of copper, unprotected steel, cathodically protected steel, and plastic pipe.
- Pressure Regulator Stations – Pressure regulator stations are installed for the purpose of reducing and/or regulating pressure for downstream gas lines mains or valves.
- Services – The utility equipment associated with connecting a natural gas main to a customer premise. It includes the connection line, shut-off valve, regulator, and the meter.

CECONY provides natural gas to approximately 1.1 million customers in Manhattan, the Bronx, parts of Queens and most of Westchester County.¹⁵ Its 471 square mile natural gas

¹³ CEI Form 10-K page 24 filed 02/18/2016

¹⁴ DR 645-O Attachment 1 Page 9

¹⁵ CEI Form 10-K page 13 filed 02/18/2016

service territory consists of an estimated 4,348 miles of mains and 369,791 service lines.¹⁶ Approximately half the system mains consist of leak prone cast iron and unprotected steel pipe.¹⁷

CECONY has eleven gate stations (aka City Gates) supplying the gas system from four pipeline companies (Transco, Spectra, Tennessee and Iroquois). There are three gate stations in New York City (NYC), three stations in Westchester, one station in the Bronx and four stations in Northern Westchester.¹⁸ CECONY's transmission system is part of a larger regional network, the New York Facilities (NYF) System. The NYF System is jointly operated and maintained by National Grid and CECONY. CECONY is connected to National Grid at two bi-directional metering stations – one at the Brooklyn/Queens border and one at Long Island/Queens border.¹⁹ CECONY also owns and operates a liquefied natural gas (LNG) facility in Astoria.²⁰ LNG facilities liquefy natural gas into LNG that is stored in tanks. On peak days, LNG may be vaporized into natural gas and distributed to customers on the distribution system. The Astoria Plant can withdraw up to 250 MDt per day of natural gas daily for four consecutive days.²¹

The O&R natural gas system includes one mile of non-high consequence area pipeline and its delivery system consists of over 1,876 miles of natural gas mains and 105,482 service lines²² serving approximately 132,000 gas customers.²³ O&R's gas service territory encompasses a 599 square mile service area²⁴ that is principally residential in nature, with a diverse base of commercial, industrial, agricultural and recreational facilities. O&R operates 13 gate stations throughout New York and New Jersey, predominantly along its western border. In addition, O&R has eight regulator stations and three interstate pipeline interconnections.²⁵

CECONY Steam System

CECONY operates the largest steam distribution system in the United States, producing and delivering approximately 22,000 MMlbs of steam annually to approximately 1,700 customers in New York City, such as the United Nations, the Empire State Building and the Metropolitan Museum of Art.²⁶

¹⁶ CEI Form 10-K for the Fiscal Year Ended December 31, 2015, filed 2/18/2016, page 21.

¹⁷ DR 122-C

¹⁸ DR 92-B, Attachment 1 Confidential Response

¹⁹ DR 637-C Attachment 1

²⁰ CEI Form 10-K for the Fiscal Year Ended December 31, 2015, filed 2/18/2016, page 21.

²¹ CEI Form 10-K for the Fiscal Year Ended December 31, 2015, filed 2/18/2016, page 21.

²² CEI Form 10-K for the Fiscal Year Ended December 31, 2015, filed 2/18/2016, page 25.

²³ DR 20-O

²⁴ CEI Form 10-K for the Fiscal Year Ended December 31, 2015, filed 2/18/2016, page 13.

²⁵ DR 652 Confidential Response

²⁶ CEI Form 10-K for the Fiscal Year Ended December 31, 2015, filed 2/18/2016, page 13.

Natural Gas Pipeline Safety

Gas distribution companies such as CECONY and O&R are subject to numerous federal and state regulations including many intended to increase safety for customers, the public and utility workers.

Federal Pipeline Safety Regulations

The U.S. Department of Transportation's Pipeline and Hazardous Materials Safety Administration (PHMSA) outlines the minimum federal safety standards for the transportation of gas by pipelines in Title 49 Part 192 of the Code of Federal Regulations (CFR). Important elements of the code include the following:

- Subpart L prescribes minimum requirements for the operation of pipeline facilities.
 - Procedural manuals are the focus of §192.605, which requires that each operator prepare and follow a manual of written procedures for conducting operations and maintenance activities and for emergency response for each pipeline. For transmission lines, the manual must also include procedures for handling abnormal operations. This manual must be reviewed and updated by the operator at intervals not exceeding 15 months, but at least once each calendar year.
 - Damage prevention program guidelines are outlined in §192.614, which requires that a written program be developed to prevent damage to pipelines from excavation activities.
 - Emergency procedure requirements are detailed in §192.615, which requires the preparation of written procedures to minimize the hazard resulting from a gas pipeline emergency.
 - Public awareness requirements are defined in §192.616, which orders the development and implementation of a written, continuing public education program that follows the guidance provided in the American Petroleum Institute's (API) Recommended Practice (RP) 1162 1st edition.
- Subpart N details the required qualifications of pipeline personnel.
 - Qualification program requirements are listed in §192.805, which states that each operator shall have and follow a written qualification program.
 - Recordkeeping mandates are described in §192.807. Qualification records must be retained for five years and include identification of qualified individual(s) and the covered tasks the individual is qualified to perform, as well as dates and methods of current qualification(s).

Two sections of the code that are of particular importance to the utilities' gas system planning pertain to the Integrity Management Program (IMP) and the Distribution Integrity Management Program (DIMP).

- Subpart O prescribes minimum requirements for an integrity management program on any gas transmission pipeline (IMP).

- Subpart P prescribes minimum requirements for an integrity management program on any gas distribution pipeline (DIMP).

Natural Gas Transmission IMP

The pipeline integrity management regulations require transmission operators to develop and implement a formal, documented IMP. The IMP Framework lays the foundation for how the operator intends to develop and implement its program. The elements of an IMP include management, analytical, and operational processes specified in 49 CFR Part 192:

- An identification of all high consequence areas (HCAs).
- A baseline assessment plan.
- An identification of threats to each covered pipeline segment, which must include data integration and a risk assessment. An operator must use the threat identification and risk assessment to prioritize covered segments for assessment and to evaluate the merits of additional preventive and mitigation measures for each covered segment.
- A direct assessment plan, if applicable.
- Provisions for remediating conditions found during an integrity assessment.
- A process for continual evaluation and assessment.
- If applicable, a plan for confirmatory direct assessment.
- Provisions for adding preventive and mitigation measures to protect the HCA.
- A performance plan that includes performance measures.
- Record keeping provisions.
- A management of change process.
- A quality assurance process.
- A communication plan that includes procedures for addressing safety concerns raised by the Office of Pipeline Safety (OPS) and a State or local pipeline safety authority when a covered segment is located in a State where OPS has an interstate agent agreement.
- Procedures for providing (when requested), by electronic or other means, a copy of the operator's risk analysis or integrity management program to OPS and a State or local pipeline safety authority when a covered segment is located in a State where OPS has an interstate agent agreement.
- Procedures for ensuring that each integrity assessment is being conducted in a manner that minimizes environmental and safety risks.
- A process for identification and assessment of newly-identified HCAs.

CECONY maintains one natural gas IMP for its New York service territory. O&R does not file an IMP as the Company determined that in accordance with the code criteria there are no transmission pipelines in high consequence areas. CECONY developed its IMP in 2004 in accordance with Department of Public Service New York Code of Rules and Regulations (16 NYCRR) Part 255 and 49 CFR Part 192, Subpart O.

Natural Gas DIMP

The PHMSA published final regulations establishing integrity management requirements for gas distribution pipeline systems on December 4, 2009. These regulations specify how

distribution utilities must identify, assess, prioritize, evaluate, repair and validate the integrity of distribution mains. DIMP regulations require gas distribution utilities to 1) know the risks in their system, 2) identify various threats in the system, and 3) be able to mitigate the threats. Gas distribution companies are required to develop, write, and implement a DIMP with the following elements:

- Knowledge,
- Identify threats,
- Evaluate and rank risks,
- Identify and implement measures to address risks,
- Measure performance, monitor results, and evaluate effectiveness,
- Periodically evaluate and improve program, and
- Report results.

CECONY and O&R have two separate DIMPs for their respective service territories. The DIMPs are similar for the two utilities with minor differences in calculations of baselines and threat analysis.

New York Pipeline Safety Requirements

The 16 NYCRR prescribe minimum safety requirements for the design, fabrication, installation, inspection, testing, and operation and maintenance of gas transmission and distribution systems, including gas gathering lines, gas pipelines, gas compressor stations, gas metering and regulating stations, gas mains, service lines, gas storage equipment of the closed pipe type fabricated or forged from pipe or fabricated from pipe and fittings, and gas storage lines not covered by 49 CFR Part 192.

Title 16 NYCRR Part 255 applies to CECONY and O&R and includes all of the requirements set forth in 49 CFR Part 192 of the Department of Transportation (DOT) Regulations for Transportation of Natural and Other Gas by Pipeline: Minimum Federal Safety Standards. Title 16 NYCRR states that the rules and regulations expressed or implied by Part 255 meet or exceed the Minimum Federal Safety Standards.

Important elements of 16 NYCRR Part 255 include the following:

- Parts §255.100-559 cover pipeline design, installation, components, welding and connections, service lines, protection, maximum pressures and conversions.
- Parts §255.600-629 provide minimum requirements for the pipeline facilities operation in sections that include:
 - Operator qualifications,
 - O&M plan essentials,
 - Continuing surveillance,
 - Emergency plans,
 - Operating pressure,
 - Gas odorization, and
 - Tapping and purging.

- Parts §255.700-757 provide minimum requirements for pipeline facilities maintenance.
- Parts §255.800-827 cover accident reporting, leaks, service interruptions, and facility failure investigations.
- Parts §255.900-951 cover minimum requirements for an integrity management program including continuous evaluation, assessment and measuring program effectiveness semi-annually.

Reforming the Energy Vision

The electric industry is undergoing a period of tremendous change due to factors such as innovative technology, an increasingly digital economy, aging infrastructure, climate change, advancement in distributed generation technologies and an increasing gap between the traditional electric utility function and future requirements.²⁷

The State of New York is responding to these challenges. In April 2014, the Commission commenced its Reforming the Energy Vision (REV) initiative to reform New York State’s energy industry and regulatory practices. This initiative promotes more efficient use of energy, deeper penetration of renewable energy resources such as wind and solar, wider deployment of “distributed” energy resources, such as micro grids, on-site power supplies, and storage. It will also promote greater use of advanced energy management products to enhance demand response and efficiencies.

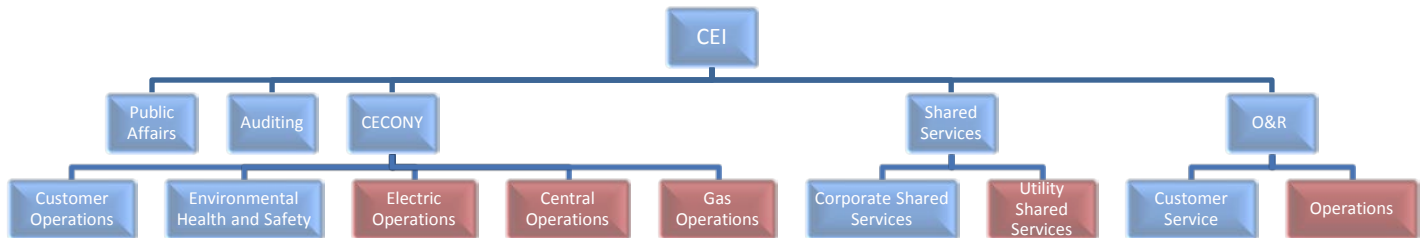
On February 26, 2015, the PSC issued an order adopting a regulatory policy framework and implementation plan for REV. One element of REV is that distributed energy resources (DER) will be integrated into the planning and operation of electric distribution systems, to optimize system efficiencies, secure universal, affordable service, and enable the development of a resilient, climate-friendly energy system. DER includes end-use energy efficiency, demand response, distributed storage, and distributed generation. DER will principally be located on customer premises, but may also be located on distribution system facilities.

Organization

System planning at CECONY and O&R is conducted throughout the entire organizations. **Exhibit IV-4** provides a high-level organization chart that highlights system planning functions.

²⁷ CASE 14-M-0101, Reforming the Energy Vision, Order Adopting Regulatory Policy Framework and Implementation Plan (issued February 26, 2015).

Exhibit IV-4 System Planning Organizations



Note: Organizations shown in red perform system planning activities.

Source: DR 1-B Supplement.

- CECONY Electric Operations is responsible for a number of electric distribution planning elements including system analyses to support asset management programs, storm hardening programs, and system reinforcement for growth. Specific organizational units include:
 - Asset Management,
 - Network Systems and Design,
 - Overhead Standards and Planning,
 - Secondary System Analysis,
 - Supervisory Control and Data Acquisition (SCADA),
 - Bronx/Westchester Customer & Regional Engineering,
 - Manhattan Customer & Regional Engineering,
 - Brooklyn/Queens Customer & Regional Engineering, and
 - Staten Island Customer & Regional Engineering,
 - Distribution Planning Department.
- CECONY Central Operations is responsible for electric transmission planning studies, development of the transmission system plan and steam planning. Specific organizational units include:
 - Transmission Planning,
 - Steam Performance and Operations/Long Range Planning,
 - Asset Management,
 - Substation Planning,
 - Capital Strategy & Advanced Planning, and
 - Transmission Operations.
- CECONY Gas Operations is responsible for the main replacement program, asset management programs, the IMP and DIMP, the Gas Transmission Plan and system reinforcements. Specific organizational units include:

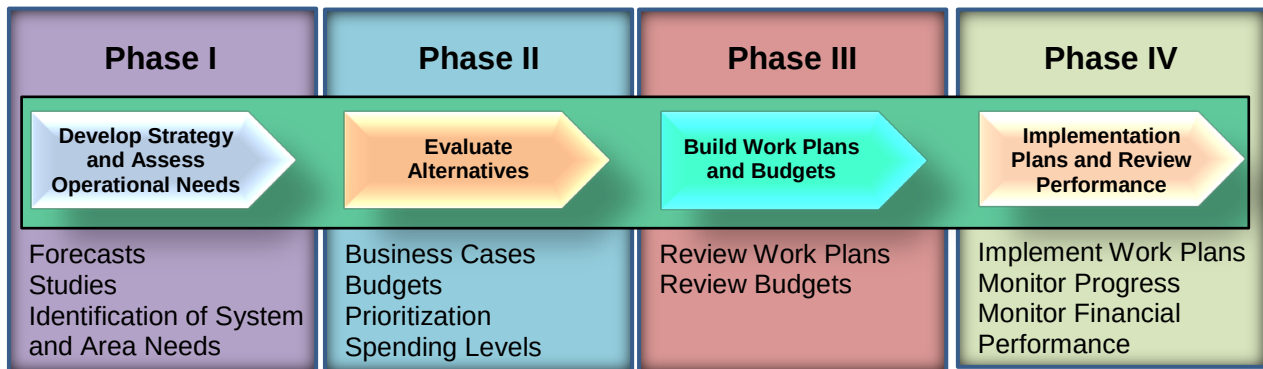
- Gas Transmission Planning and Pipeline Integrity
- Gas Distribution Planning.
- CECONY Shared Services is responsible for the natural gas, electricity and steam peak demand forecasts for both CECONY and O&R. Specific organizational units include:
 - Demand Forecasting
 - Forecasting Services.
- CECONY Finance is responsible for the natural gas, electricity, and steam sales and throughput forecasts for both CECONY and O&R. The specific organizational unit is Revenue and Volume Forecasting.
- O&R Electrical Engineering is responsible for system studies, the transmission system plan and asset management programs. Specific organizational units include:
 - Transmission and Substation Engineering
 - Distribution Engineering
 - Systems Engineering
 - Technology Engineering.
- O&R Gas Engineering is responsible for system studies, the DIMP and asset management programs. Specific organizational units include:
 - Gas Engineering Projects – Systems
 - Gas Engineering Projects – Facilities.

Planning Process

CECONY and O&R each employ the same four-phase process for system planning as depicted in **Exhibit IV-5**. The four-phase process begins with load forecasting and development of system studies (Phase I) and flows through budgeting, analysis of alternatives (Phase II), work plans (Phase III) and finally performance review (Phase IV). The system plans are then aligned with the corporate strategy and budgeting cycle where quantitative analysis is conducted for overall strategic value. Work ranking highest in strategic value is proposed for inclusion in the budget.²⁸

²⁸ DR 38

Exhibit IV-5 System Planning Process



Source: DR 38.

B. EVALUATIVE CRITERIA

The system planning evaluative criteria were taken from the final work plan and include both the DPS Staff's evaluative criteria from the RFP and those added by NorthStar.

- Do CECONY and O&R have appropriate priorities, guidance and other instructions for evaluations, tradeoffs and decision-making including:
 - Asset condition and planned management processes
 - Using input from the asset management process such as age, obsolescence, advanced technology and preventive maintenance
 - Linking asset management decisions (e.g., predictive failure analyses) to improve reliability and performance?
- Are the processes and criteria for making decisions regarding replace vs. repair, including how the overall construction program planning process is affected, appropriately documented, and adhered to?
- Do CECONY and O&R develop accurate system forecasts for natural gas, electricity and steam and are they incorporated into system infrastructure requirements?
- Are demand response initiatives effective and are they considered in the planning process?
- Does CECONY and O&R system planning and gas/electric/steam service expansion criteria appropriately address the economic benefits, the capability to serve, and any potential impediments to system expansion? (These evaluative criteria cover the same subjects as those highlighted in Chapter III – Corporate Governance.)
- Are other load, infrastructure factors, governmental and corporate initiatives such as advanced technology, distributed generation, advanced metering and energy

efficiency initiatives given appropriate consideration in the planning process? (These evaluative criteria cover the same subjects as those highlighted in Chapter III – Corporate Governance.)

- Are practices related to serving new load and new customers formalized and effective?
- Are service areas that need higher levels of service identified, planned and addressed?
- Are conversions from oil to natural gas marketed, planned and provided?
- How does the company incorporate external factors such as extreme weather events and climate change into capital project planning?
- What progress has been made, and are CECONY and O&R effective in Reforming the Energy Vision:
 - Have customer knowledge and tools to support energy management been improved?
 - Has there been any appreciable market animation and leverage of ratepayer contributions?
 - Have there been improvements in system-wide efficiency?
 - Is there greater fuel and resource diversity?
 - Has system reliability and resiliency been improved?
- Do CECONY and O&R utilize cost-effective programs and processes to procure goods and services for the construction program?
- Are contracts evaluated and awarded on an impartial basis? (Moved from Chapter VIII – Program and Project Planning and Management)
- Are the needs for major projects (e.g., electric transmission, gas lines, and expansions) identified, developed and justified adequately?
- Do CECONY and O&R have appropriate leak prone pipe replacement programs which consider flood zone management, risk models and other factors to prioritize mains for replacement? (Moved from Chapter VIII – Program and Project Planning and Management.)

C. FINDINGS AND CONCLUSIONS

1. CECONY and O&R electric transmission system planning functions appropriately focus on satisfying load and reliability requirements.

- CECONY and O&R develop annual transmission plans. The transmission plans are based on a set of models and studies resulting in a ten-year plan of future transmission needs. Meeting forecast system coincident peak demand and pre-defined design criteria are the relevant considerations in determining the transmission

system plan.²⁹ CECONY's transmission system is planned in accordance with fundamental design principles, which are applicable to all new projects proposed by the Company and independent developers. Any exceptions to these principles must be approved by the Chief Engineers of Transmission Planning and Electrical Engineering.³⁰

- CECONY and O&R use a combination of double and single contingency design criteria for its transmission system.³¹ Contingencies can include loss of lines, generation, transformers, bus sections, and breaker misoperations, as well as common mode failures such as double circuit towers.³²
- The performance criteria of CECONY's transmission system requires the evaluation of voltage, thermal, stability, transient, and short circuit performance of the system with all facilities in service, as well as under the contingency conditions.
- CECONY and O&R studies are up-to-date. **Exhibit IV-6** provides an overview of annual system studies performed and their contribution to the transmission plans.

Exhibit IV-6
CECONY and O&R Annual Transmission System Studies

Study	Purpose	CECONY	O&R
Power System Simulation for Engineering (PSS/E) Thermal Study	Siemens System Simulation for Engineering Model analyzes load flows to identify system thermal overloads during normal and contingency operating conditions.	X	X
PSS/E Voltage Study	PSS/E also analyzes system under and over voltage situations resulting from normal and contingency operating conditions.	X	X
ASPEN Short Circuit Study	ASPEN is used to calculate system fault short circuits values in order to rate power equipment.	X	*
Managing and Utilizing System Transmission (MUST) Transfer Limit Study	Siemens MUST is used to evaluate load shifting limits during extreme and normal operating conditions.	X	*
Electromagnetic Transients Program (EMTP) Transmission Switching Surge and Lightning Withstand Capabilities Study	Lightning strikes on a transmission system causes voltage and power surges. This study examines the system capabilities for handling such surges and pinpoints the location of surge arrestors and shunt reactors.	X	X
Extreme Contingencies Study	Identifies customer and system impacts under a worst case scenario involving multiple contingencies.	X	X
Summer Peak Operating Study	Includes Thermal Study, Voltage Study, Extreme Contingencies Study	X	X

* DR 645-O – O&R Transmission Plan indicates the New York Independent System Operator conducts ASPEN and Transfer Limit Studies annually.
Source: DR 646.

²⁹ DR 652-C Attachment 1

³⁰ DR 69-C Supplemental

³¹ DRs 69 and 650

³² Fact Verification 3/30/2016

2. CECONY electric distribution planning is largely focused on solutions to load and maintaining reliability. CECONY has begun to target programs to direct capital to the most critical system needs.

- Coincident system peak demand is forecast to increase less than one percent annually, resulting in very few activities associated with planning for increased supply capacity notwithstanding any unforeseen major generating unit retirements, unit mothballing or major plant outages.³³
- Opportunities to improve the system based on increased capacity are scarce, necessitating a more thoughtful approach to optimizing capital expenditures.
- CECONY has targeted its asset management activities around key objectives with supporting programs. **Exhibit IV-7** lists the objectives, the associated programs, and an overview of how the program has been strategically planned.

**Exhibit IV-7
CECONY System Reliability and Storm Hardening Programs**

Objective	Program	Strategy for Prioritization
Storm Response	Install submersible equipment as discussed in Conclusion IV-7.	Identification of facilities located in FEMA 100 year plus three foot flood zone.
Reduce Underground Transformer Failures	Replace transformers at or near the end of their useful lives.	5 year inspection program. Monitoring pressure, temperature and oil leaks. Monitoring dissolved gases.
Prevent Primary Network Shutdown	Replace primary network equipment to maintain system reliability.	Network Reliability Index model to probabilistically identify circuits most like to fail.
Improve Secondary Network Reliability	Replace failing secondary cables, switches and associated equipment prior to failure	CECONY will install gas monitors in 2016 to determine which of manholes are at risk. Manhole events, including “smoking” occur in approximately one percent of the structures annually. Stray voltage detection surveys to determine cable failure. Secondary NRI model to probabilistically predict future failures.
Reduce Circuit Segment Size	Improve reliability by limiting number of customers to 500 per feeder segment.	375 remaining locations. To be completed by end of 2016.
Isolation of Open Wire Spurs from Feeder Main Runs	Fuses and fused by-pass switches will be installed on any open spurs greater than 2 spans to improve reliability.	300 remaining locations. To be completed by end of 2015.
Improve non-network feeder reliability	Modeling of non-network circuits to predict worst performers. Identify corrective work such as adding new supply ties, upgrading wire, splitting loops, installation of sacrificial components.	Ongoing. Plan to spend \$13 Million annually. There are 4 loops planned for 2015.

³³ DR 61-C and 61-O Confidential Response and NorthStar Analysis

Selective conversion from overhead to underground installations	Underground systems in Staten Island and Westchester were evaluated and found to cost \$8.2 million per mile.	This plan is funded at \$80 million per year. CECONY is using Aerial Cable as an alternative to conversions.
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Source: DR 69-C and IR 246.

- O&R conducts annual substation and transformer bank studies. The studies anticipate system constraints at the two year and five year points. System solutions are identified and submitted for budget approval.³⁴

3. Both CECONY and O&R have informal and subjective processes and criteria for making decisions regarding when to replace vs. repair system equipment.

- CECONY's overhead electric distribution system and its equipment, replacement versus repair determinations are driven by inspection and testing during routine maintenance activities or equipment condition at the time of a related failure. Inspection and testing programs include the following equipment groups:
 - Step-voltage regulators,
 - Pole mounted switched capacitor banks,
 - Radial transformers,
 - Vacuum reclosures,
 - Replacement of overhead equipment during pole replacement, and
 - Infrared inspections on overhead distribution system and repair priority.³⁵
- CECONY network transformers and associated equipment repair and replacement is determined either by the condition of the transformer or the need to upgrade the unit.
 - Repair or replacement driven by transformer condition is typically determined through the cyclical inspection program, monitoring or incidental field work which often includes inspection. Equipment is either repaired or replaced based on the observed severity of the transformer condition as outlined in the equipment specifications.
 - In cases where an equipment group is considered for programmatic replacement, a broad array of considerations such as age, reliability, maintenance cost, asbestos/lead cable, loading and physical condition are included in management's decision-making.³⁶
- CECONY Gas Operations' capital programs and projects support system expansion, system reliability and risk reduction. Gas Operations has annual projects and programs to replace aging infrastructure, equipment that has not yet failed but is performing poorly, and has become difficult or costly to maintain, or is approaching the end of its useful life. Replacement guidelines include the following:
 - Gas system design criteria,

³⁴ DR 69-0 Attachment 9

³⁵ DR 170-C

³⁶ DR 170-C Attachment 9

- Procedure for determining the soundness of steel gas distribution piping,
 - Repairs and improvements on the gas system prior to street reconstruction, repaving project,
 - Replacement and maintenance of cast iron pipe located in construction areas, and
 - Procedure for evaluating cast iron distribution system piping for replacement or retirement.
- CECONY did not provide any criteria associated with its steam system.
 - O&R also relies on inspection programs and does not have a procedure that describes the decision-making process to repair or replace equipment.
 - The decision to repair or replace equipment is made on a case-by-case basis.
 - O&R's general approach is that if equipment can be repaired, then it is repaired; if repairing the failed equipment is not an option, due to equipment obsolescence, the unavailability of parts, cost, or other similar factors, then the equipment is replaced.³⁷

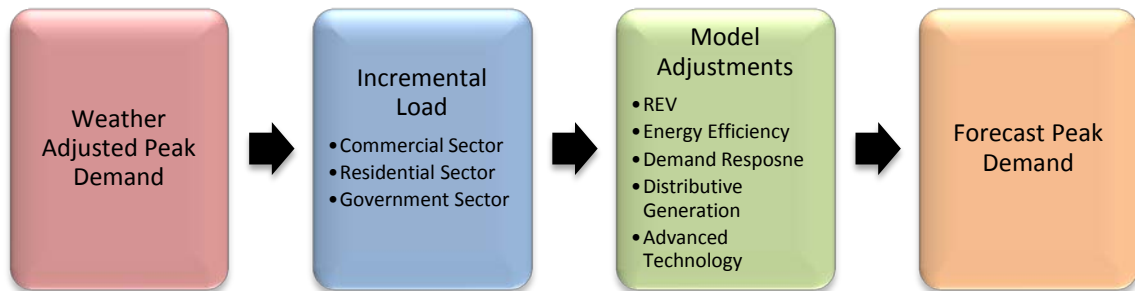
4. CECONY and O&R system planning functions concentrate on traditional solutions to the forecast load.

- Forecast peak load drives system planning, both for the coincident electric system peak demand and the electric network load area independent peak demand.
- The Company develops its Long-Term Electric System Coincident Peak Demand Forecast for a twenty year time horizon using internally developed models. The Electric System Peak Demand Forecast begins with the Forecasting Services section of Energy Management. Forecasting Services assesses the prior summer's actual daily peak demands and adjusts the overall season's peak demand to a design condition based on a one-in-three probability of meeting or exceeding a certain temperature condition over 30 years. The method used to develop the weather adjusted peak demand is Ordinary Least Squares regression analysis.
- The Long-Term Electric System Peak Demand Forecast is developed within the Demand Forecasting Section of Energy Management. The forecast is produced by adding incremental demand growth measured in Megawatts (MW) of key sectors such as Residential, Commercial, and Governmental, among other contributors (e.g., Steam A/C to electric A/C and Electric Vehicles).
- The model results are then adjusted for New York State energy efficiency programs and load modifiers for new technologies and other known changes in load that are not captured in the demand growth models. The Weather Adjusted Peak Demand established by Forecasting Services acts as the base to which incremental growth is

³⁷ DR 170-O

added predicated on Demand Forecasting’s internally developed models. **Exhibit IV-8** illustrates the forecasting process flow.³⁸

Exhibit IV-8 Electric Load Forecasting Process



Source: DR 61-C Attachment Confidential Response

- The system planning process concentrates on forecast load “on the system” and does not incorporate other load, infrastructure factors, governmental and corporate initiatives such as advanced technology, distributed generation, advanced metering and energy efficiency initiatives. These initiatives are quantified in the load forecast and addressed by a separate distributed resource integration group established in July 2015 at CECONY and called the “Utility of the Future” organizational unit at O&R.³⁹
- Energy efficiency and other demand-side management programs are included in the peak demand forecast since measured load incorporates their impact and future load is reduced by their expected load reductions. Electric peak demand, steam peak demand and natural gas peak day forecasts are net of REV initiatives, distributed generation and demand side management programs.⁴⁰
- Demand response programs are in many cases based on incentivized customer enrollment implemented by Demand Response Aggregators and other market participants. These are not studies or programs within the traditional “system planning” function.
- NorthStar requested a description of gas demand response programs. CECONY and O&R stated they do not have demand response programs for natural gas although interruptible gas rates may be considered a demand response program.⁴¹

³⁸ DR 69-C Attachment

³⁹ DRs 61 Confidential Response, 69, 72 and 73

⁴⁰ DR 511 Confidential Response

⁴¹ DR 101-B

5. Fundamental CECONY and O&R gas/electric/steam service system planning and expansion criteria address economic benefits, the capability to serve and potential impediments to system expansion.

- CECONY addresses electric system expansion through a combination of considerations, including expected new load and system capabilities. CECONY addresses traditional system solutions in an economic dispatch order:
 - Power factor correction (add capacitors),
 - Phase or load balance/transfer,
 - Upgrade cable,
 - Upgrade a transformer,
 - Create a new distribution feeder,
 - Create a new network, and
 - Build a new substation.⁴²
- When traditional system planning solutions appear ineffective or CECONY has system limitations, CECONY has sought non-traditional customer partnerships to reduce load.⁴³
- The O&R electric distribution system originates at the distribution substation power transformer and ends at the customer's meter.⁴⁴ Distribution planning and expansion criteria use equipment ratings/specifications and consider economic loading, recognizing changes in load shape, flattening/widening the peak profile and customer hour limits for accepted loss of load. Service reliability is considered with respect to both momentary and permanent outages. O&R distribution planning criteria specifically address subject areas such as:
 - System efficiency,
 - Service reliability,
 - Voltage quality,
 - Power quality,
 - Demand-side management impacts,
 - Contingency planning, and
 - Least-cost planning.
- O&R performs annual planning studies that determine electric load growth and assess the performance of the electric delivery system throughout a future forecast period against its design standards to determine whether the electric facilities are, or will be, operating outside of acceptable tolerances with respect to equipment loading.⁴⁵
 - O&R uses all of the projected loads determined through its forecasting process to perform a detailed contingency analysis for a failure (removal) of each component

⁴² DR 905

⁴³ DR 77-C

⁴⁴ DR 77-O Attachment 1

⁴⁵ DR 217-O

(transmission line, bank, and distribution circuit) and compares the results to O&R's design standards.

- The results of the contingency analysis are a major contributor toward prioritizing projects.
- O&R system planning focuses on meeting the design standards for a transformer bank contingency (potential failure). When evaluating a capital project, system planning considers the additional years that the project allows a transformer bank to continue to meet the design standards, and to a lesser extent, the components that benefit a circuit contingency. This process is repeated for each station that the project benefits. For the substation transformer bank study provided to NorthStar for analysis, O&R used contingency, interruption customer-hours and additional capacity as weighting factors to determine priority.
- CECONY's steam system planning and service expansion is addressed by Steam Operations Procedure S-12000 – Steam New Business Process. This procedure details the steps, departments involved and departmental responsibilities for providing steam service for new customers or an existing steam customer with changes in load requirements or service relocations.⁴⁶ The new business process is a five-phase process that considers service information, economics including customer prepayments, rates, design, system upgrade requirements (e.g., meter station upgrades), inside/outside construction and inspection.

6. Conversions from oil to natural gas and system expansion are marketed, planned and constructed appropriately.

- Gas system expansion occurs in several ways:
 - Expansion of access to existing infrastructure within the service territory. This is often due to customer interest or program development.
 - Expansion of gas infrastructure into areas currently unserved or underserved (e.g., cooking-load-only sized mains and/or services).
 - Expansion into territories currently not served by any local gas distribution company.⁴⁷
- CECONY and O&R have focused on expanding their gas systems in existing territories where supply is accessible and where it does not impact existing customers (considered rate neutral). CECONY and O&R's gas system expansion efforts have been conceptually similar but different in scope due to the significant construction cost differences between CECONY and O&R (e.g., topography, permit costs, work stipulations) and the differences in the load profiles of the two service territories (CECONY has a significant load in building-dense Manhattan and the Bronx).⁴⁸

⁴⁶ DR 150-C Attachment 1

⁴⁷ DR 102-B

⁴⁸ DR 102-B

- Conversions from heating oil to natural gas and new construction are the primary drivers of gas system expansion within the CECONY and O&R service territories.
- CECONY's gas expansion opportunities within New York City are largely driven by NYC regulations that require large buildings burning heavy heating oil to switch to a cleaner fuel.
 - In 2011, NYC adopted rules to phase out the use of heavy heating oil (Clean Heat Program). The Clean Heat Program governs emissions from the use of No. 6 and No. 4 fuel oil in heat and hot water boilers and burners. The Clean Heat Program requires buildings to convert from No. 6 and No. 4 heating oil to cleaner fuels, such as No. 2 oil or natural gas, or to convert to another heating system either by 2015 (for No. 6 oil) or 2030 (for No. 4 oil).⁴⁹
 - In 2013, CECONY established a New York City Clean Heat Area Growth Program (Area Growth Program or Program) within its gas tariff schedule. The Area Growth Program is intended to help implement NYC's Clean Heat Program.
 - CECONY has converted over 2,500 very large buildings since the program began in 2011, with a significant number of conversions in 2013 and 2014.
 - CECONY believes that the program has generated significant delivery revenue while remaining rate neutral and significantly reducing stranded assets.

7. The companies have a number of methods for incorporating external factors such as extreme weather events and climate change into capital project planning.

- Hurricane Sandy (2012) resulted in five times as many outages as the second most severe storm to hit the companies' service territories, Hurricane Irene (2011). In order to prevent catastrophic system failure, CECONY has developed a preventive de-energization program in the event of extreme weather events. CECONY has also identified storm-hardening needs in the Company's Coastal Storm Plan (CCSP).
- CECONY's storm hardening programs include the replacement of non-submersible equipment with submersible equipment in flood prone areas.
 - 120/208V transformers/network protector units
 - 460V Network protectors,
 - Customer Isolation switches, and
 - 120V manhole isolation through switch installation
- CECONY overhead storm hardening programs include:
 - Limit circuits to 500 customers,
 - Isolation of Open Wire Spurs from Feeder Main Runs with fuses, and
 - Predictive circuit failure modeling and remediation.⁵⁰

⁴⁹ DR 105-C

⁵⁰ DR 69-C Attachments 1-3

8. CECONY does not develop a formal, consolidated electric distribution system plan.

- The distribution system planning activity is performed by CECONY regions and centrally. Load relief and storm hardening programs are aggregated into formal CECONY plans. Other planning products/studies are not aggregated into a formal CECONY Plan.
- Nine CECONY organizational groups perform distribution system planning. Each of these organizations operates independently.
 - CECONY Electric Operations
 - Asset Management,
 - Network Systems and Design,
 - Secondary System Analysis,
 - Bronx/Westchester Customer & Regional Engineering,
 - Manhattan Customer & Regional Engineering,
 - Brooklyn/Queens Customer & Regional Engineering, and
 - Staten Island Customer & Regional Engineering.
 - CECONY Shared Services
 - Demand Forecasting, and
 - Forecasting Services.
- NorthStar believes a consolidated electric distribution system plan is necessary for the Distributed System Implementation Plan (DSIP).
- CECONY conducts annual system analyses to identify distribution system needs. Analyses include:
 - Poly-Voltage Load Flow (PVL) Studies – PVL is CECONY’s principal distribution system design and analysis system. Each electric region performs annual PVL studies of the primary systems in its area to ensure adequate capacity.⁵¹
 - PVL is a collection of distribution systems analysis, data management, and report generating programs available under one single user interface. Distribution systems analysis programs, such as Load Flow, Short Circuit, and Feeder Rating, form the core of PVL.⁵²
 - PVL studies are used to develop short-term forecasts covering one to two years of distribution system requirements. The forecasts are four spreadsheets that identify system solutions.
 - Based on the results of the studies, capital projects are submitted to the strategic value review.

⁵¹ DR 69-C

⁵² DR 72-C

- Network Reliability Index (NRI) program – NRI is used to rank primary and secondary networks based on their reliability, so that resources can be allocated to areas that need improvement.
 - According to CECONY, NRI calculates the probability of a network in imminent danger of collapse (because of the failure of multiple feeders in a heat wave such that it may be difficult or impossible to feed a portion of the secondary grid) by performing a 10,000 iteration, 20-year simulation.⁵³
 - There are 65 primary networks modeled using the NRI model. Since 2011, CECONY has reduced the number of networks not meeting reliability criteria from fifteen to one. This was accomplished by targeted programs to improve reliability such as cable replacements.
 - The NRI process to identify and implement primary system needs is effective but NorthStar identified a number of concerns:
 - The NRI analysis does not produce a formal work product.
 - System needs and solutions are transmitted via email to the appropriate regional engineering groups.⁵⁴
 - CECONY is now developing predictive failure probability capability for its secondary networks. Secondary network failures are at an all-time high and much attention is needed to correct an aged system in logical and methodical manner.
 - The REV initiative requires a new distribution system platform (DSP). The DSP platform will require integration between both the traditional distribution system and the customer-side of the electric meter. A consolidated planning product is necessary for the DSIP.
 - O&R has one central Electrical Engineering organization that prepares its planning products.⁵⁵
- 9. CECONY and O&R adequately identify, develop and justify the needs for major projects such as electric transmission lines, gas lines, and service expansions.**
- CECONY and O&R perform regular system studies to identify constraints and where reliability improvements are needed. Analyses of the gas system are performed using Synergee, a critical load flow analysis tool (CECONY uses an upgraded version called Synergi), while electric system assessments use the PVL circuit analysis and a variety of Siemens Power system analysis programs.⁵⁶

⁵³ DR 72-C

⁵⁴ DR 630-C

⁵⁵ DRs 1-B Supp 2, Attachment 3 and 69-O Attachment 9 and 10

⁵⁶ DR 353-O, DR 11-C

- Both gas and electric transmission develop formal system plans, which identify major system needs.⁵⁷ Distribution system needs are determined by the regions.
- CECONY and O&R prepare white papers to introduce a project into the capital program. White papers include:
 - Work Description – description of the work to be done
 - Justification – reason for the project and expected results
 - Supplemental Information – alternatives, estimates and risk
 - Budget Information – current and future budget amounts.
- Both CECONY and O&R submit the project white papers to Governance Committees who select projects using capital project prioritization and optimization model, as described in the audit conclusions below.
- In its 2015 Long Range Transmission Plan, CECONY identified two system needs: a feeder installation between Rainey and Corona and a breaker at Greenwood Substation. NorthStar reviewed the white papers associated with these projects and found them to be complete.⁵⁸

10. CECONY and O&R have developed a comprehensive and sophisticated program of capital project prioritization and optimization which provides a framework for evaluations, tradeoffs and decision-making.

- CECONY and O&R have developed and implemented a Capital Optimization Process to evaluate projects and programs on an enterprise-wide basis, and to optimize expenditure decisions within operating units through the use of standardized analytical methods and guidelines. The process has been in place since 2010 at CECONY and was developed through an initiative facilitated by the Business Improvement Services organization, in conjunction with CECONY's senior management team. The process was implemented at O&R starting in 2013.⁵⁹
- The objectives of the Capital Optimization Process are as follows:
 - Increased visibility over how much was being spent on capital programs and projects
 - Improved alignment between capital investments and corporate strategies
 - Improve utilization of the discretionary budget
 - Optimizing the strategic value of the capital program/project portfolio.⁶⁰
- Recent CECONY and O&R actions to accomplish the Capital Optimization Process objectives are discussed in the bullets below and include:

⁵⁷ DR 645

⁵⁸ DR 647

⁵⁹ DR 74

⁶⁰ DR 74, Confidential Response

- Identifying and prioritizing nine corporate “strategic drivers” that are used at both companies and for all business units / service functions
 - Establishing an organizational structure to define and implement the process
 - Establishing a governance structure
 - Purchasing and implementing a software application program to facilitate analysis.
- CECONY and O&R have identified nine strategic drivers that relate to corporate goals and objectives. Each driver has a corresponding weight that when associated with a potential capital project determines its priority, or overall merit vis-à-vis alternative capital projects. CECONY and O&R have defined measurement criteria that are used to assess the level of a project’s impact on each of the strategic drivers. Each project is rated an extreme, strong, moderate, low, or none based on its explicit impact to that driver. The strategic drivers are shown in **Exhibit IV-9**.

Exhibit IV-9
Capital Project Prioritization – Strategic Drivers

Strategic Driver
Improve Public and Employee Safety
Improve Customer Experience
Provide Reliable Service
Reduce and Manage Risk
Reduce Cost to Customers
Strengthen and Develop Employees
Enhance External Relationships
Strengthen Company Processes
Sustain Environmental Excellence

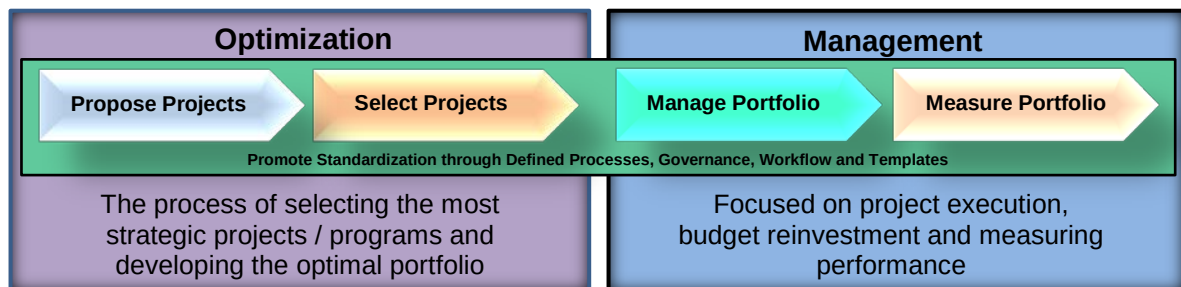
Source: DR 74, Confidential Response.

- The Project Optimization Process aligns planned capital projects with the CECONY and O&R Long Range Plans and Corporate Strategies by maximizing the strategic value per dollar spent given regulatory and operational constraints.
 - The Optimization Process aligns and ranks all capital project and program requests with the Corporate Strategic Drivers, Risks, and Benefits.
 - Proposed projects or programs are grouped under one of three categories: Regulatory Mandated, Operationally-Required, and Strategic.
- CECONY and O&R have adopted an alignment methodology to evaluate projects and programs so that funds are allocated to reduce operating risks and meet strategic objectives. This methodology takes into account the portfolio’s cost, benefits, and weighted strategic value allowing for analysis of all projects and programs as an integrated portfolio.
- CECONY and O&R established Optimization Teams for the Electric, Gas, Steam and Common portfolios. These teams use the output of the Capital Optimization Process to analyze and iterate through the Optimization Process until there is consensus on the

optimized set of projects and programs for the upcoming budget cycle. A high level illustration of the optimization program is shown in **Exhibit IV-10**.

- The selection of capital programs and projects begins with a baseline of regulatory mandated work and then expands to operationally required, in flight and strategic until resource limitations are reached.⁶¹ This process is illustrated in **Exhibit VI-11**.

Exhibit IV-10
CECONY and O&R Investment Optimization and Management Overview



Source: DR 280

- CECONY and O&R use a Microsoft computer application called PI360 to analyze all projects submitted for approval within the parameters of budget limits and priority (based on the nine strategic drivers) to obtain the maximum strategic value for each company and utility service type as applicable to each utility:
 - Electric Operations,
 - Gas Operations,
 - Electric Production, Steam Production and Steam Distribution,
 - Substations,
 - System and Transmission Operations, and
 - Common.

⁶¹ DR 280

Exhibit IV-11 Selecting Projects and Building Portfolios



Source: DR 280.

- One of the primary end products of this effort is a list of capital projects submitted for budget approval ranked in descending order of strategic value. For the Calendar Year (CY) 2016 CECONY budget planning year, this list consisted of 381 capital projects representing \$2.730 billion.⁶² Contained within the 2014-2018 O&R Capital budget, CY 2016 consisted of 113 capital projects and programs representing \$109 million.⁶³ An example of the stratified capital project list is shown in **Exhibit IV-12**.⁶⁴

⁶² DR 227-C-Supplemental Attachments 1-4 (electric, gas, steam and common capital projects)

⁶³ DR 227-O-1

⁶⁴ DR 228-C Supplemental Attachment 1 Master Portfolio

Exhibit IV-12

Example of Capital Projects – CECONY Electric T&D Project Optimization

No.	Project Name	Priority	Dept.	No.	Project Name	Priority	Dept.
1	120_208 V Non-Submersible Unit Replacement	1.31%	ED	71	DC Upgrade	0.74%	SSO
2	480V Network Protector Replacement	1.28%	ED	72	Street Lights (including conduit)	0.74%	ED
3	Overhead Equipment Upgrades	1.28%	ED	73	Emergent Transmission Reliability Program	0.73%	STO
4	Selective Undergrounding	1.28%	ED	74	Jamaica Substation-Install Additional 138kV Breakers in B_S 2E and 3W	0.72%	SSO
5	Fire Suppression	1.27%	SSO	75	Secondary Open Mains	0.72%	ED
6	Substation Loss Contingency	1.19%	SSO	76	Transformer Vault Modernization	0.70%	ED
7	Switches for Network Redesign	1.17%	ED	77	DECC Alarm Manager _ Analytics System	0.69%	ED
8	Storm Hardening SSO	1.11%	SSO	78	EMS Reliability AECC and ECC	0.68%	STO
9	Ground Grid Reinforcement	1.10%	SSO	79	Non Network SCADA Consolidation	0.69%	ED
10	Primary Feeder Reliability	1.08%	ED	80	Operations Network for EMS	0.69%	STO
11	Security Enhancements	1.07%	SSO	81	PQ View	0.68%	ED
12	Transformer Replacement	1.03%	SSO	82	ATS Installation USS Reliability XW	0.68%	ED
13	Overhead Tower Rapid Rail System	1.02%	STO	83	Cyber Security	0.68%	STO
14	Structural and Infrastructure Upgrades	1.02%	SSO	84	Roof Replacement	0.66%	SSO
15	BQDM	1.01%	ED	85	Category Alarms	0.65%	SSO
16	CPMS Enhancements	1.01%	ED	86	59th Street Bridge Crossing	0.63%	ED
17	Failed Transformer Replacement - USS	1.01%	ED	87	Circuit Switcher Replacement	0.63%	SSO
18	Part of Cooper Square (30 MW)	1.01%	ED	88	Disconnect Switch	0.63%	SSO
19	Part of Pennsylvania (74 MW) to create Midtown West network	1.01%	ED	89	Underground Secondary Reliability Program	0.63%	ED
20	Part of Richmond Hill-Brownsville (12 MW)	1.01%	ED	90	13_27kV Breakers	0.62%	SSO
21	Part of Ridgewood-Brownsville to Glendale (85MW)	1.01%	ED	91	Other Capital Equipment Upgrades	0.62%	SSO
22	Penn Network New feeders for Hudson Yards	1.01%	ED	92	Primary Feeder Relief	0.61%	ED
23	Sheridan to Canal	1.01%	ED	93	Distribution Orders Enhancements	0.60%	STO
24	New Business Capital	1%	ED	94	Electronic Distribution Feeder Sign On	0.60%	ED
25	N94 Upgrade to Solid Dielectric	0.99%	SSO	95	System Operation Enhancements	0.60%	STO
26	East 179th Street Substation-Install Fans for Limiting Bus, Breakers and Rd	0.97%	SSO	96	District Operator Task Managing System	0.59%	STO
27	Farragut - Install Transformer Cooling for 345_ 138 kV Transformers No. 1,	0.97%	SSO	97	Yorkville Crossings and Feeder Relief	0.59%	ED
28	Pipe Enhancement Program	0.97%	STO	98	Disturbance Monitoring 138kV	0.58%	SSO
29	Plymouth Street-Install Transformer Cooling On All Transformers	0.97%	SSO	99	RTU Replacement ECC and AECC	0.58%	STO
30	Pressure, Temperature and Oil Sensors	0.96%	ED	100	Network Transformer Relief	0.57%	ED
31	179th St Area Substation Reconstruction	0.95%	ED	101	Targeted Primary DBC Replacement	0.56%	ED
32	East 179th Street Substation-Install Waterspray on TR5	0.95%	SSO	102	Aerial Cable Replacement	0.52%	ED
33	East 179th Street Substation-Switchgear And Bus Replacement	0.95%	SSO	103	Meter Installation	0.52%	ED
34	Farragut - Plymouth Street - Uprate Feeder 32071	0.95%	STO	104	Meter Purchase_0	0.52%	ED
35	Glendale Substation-Establish Glendale TR 5	0.95%	SSO	105	Overhead Transformer Relief	0.52%	ED
36	New Rainey to Corona Feeder	0.95%	STO	106	4 kV USS Switchgear House Replacement	0.48%	ED
37	Overhead (Emergency Response)	0.95%	ED	107	Relay House Enclosure Program	0.48%	SSO
38	Parkchester 2 Replace Limiting 13kV Bus Sections	0.95%	SSO	108	Switchgear Enclosure Upgrade	0.48%	SSO
39	Plymouth Street-Replace limiting bus	0.95%	SSO	109	GE HMI Replacement	0.48%	SSO
40	Queensbridge Substation-Replace Overduty Switches	0.95%	SSO	110	Environmental Enhancements Program	0.46%	STO
41	Replace Limiting Sections Fdrs 32072,32076,32078 and 32710	0.95%	STO	111	Interference	0.44%	ED
42	VAR SSO-Emergent Load Relief	0.95%	SSO	112	Interference STO	0.44%	STO
43	West 65th Street Substation-Uprate Syn Bus Sections or install AC Cooling	0.95%	SSO	113	Secondary Main Relief	0.43%	ED
44	EHS Risk Mitigation	0.94%	SSO	114	NonNetwork Feeder Relief (Open Wire)	0.42%	ED
45	U Bushing Replacement Program	0.94%	SSO	115	Transformer Purchase - Storm Hardening	0.42%	ED
46	Storm Hardening STO	0.92%	STO	116	Operation Management System Enhancements	0.41%	STO
47	Area 5_5 Reliability	0.90%	SSO	117	Work Management Systems	0.39%	ED
48	Failed Equipment Program	0.89%	SSO	118	Cable Crossing (XW Riverdale _ BQ Flushing)	0.38%	ED
49	Failed Transformer Program	0.89%	SSO	119	Oricket Valley Contractor Oversight	0.38%	SSO
50	Primary Cable Replacement (OA_s)	0.89%	ED	120	ECC and AECC Facility Security Enhancements	0.37%	STO
51	Transmission Feeder Failures Program	0.89%	STO	121	Power Quality Equipment	0.35%	ED
52	High Voltage Breaker Replacement	0.88%	SSO	122	Dynamic Feeder Rating System Program	0.34%	STO
53	Joint Replacement Program	0.88%	STO	123	Transformer Installation	0.33%	ED
54	Service Replacements	0.88%	ED	124	Tejas RTU Replacement Program	0.30%	SSO
55	Vented Service Box Covers	0.88%	ED	125	Shunt Reactors	0.29%	ED
56	Electric System Damage Assessment (ESDA)	0.87%	ED	126	Tap Changer Position Indicator System Frame Relay	0.28%	ED
57	Pumping Plant Improvement	0.86%	SSO	127	Technology Improvements	0.28%	SSO
58	Ramapo-Surge Arrestors	0.86%	SSO	128	Osmose (C Truss)	0.27%	ED
59	Relay Modifications	0.86%	SSO	129	ECC UPS Battery Replacement Room1	0.26%	STO
60	Transmission Pothead Failures	0.84%	STO	130	Transformer Purchase	0.24%	ED
61	Stabilization of Pothead Stand Supports	0.83%	SSO	131	Oil Minders	0.17%	ED
62	Conditioning Based Monitoring Equipment	0.80%	SSO	132	Control Center Upgrade M and BQ	0.16%	ED
63	Remote Monitoring System 3rd Generation	0.79%	ED	133	Distribution Operations Training Simulator	0.16%	ED
64	CIP Security Upgrades	0.78%	SSO	134	USS Transformer Temperature Gauges	0.14%	ED
65	High Voltage Test Sets	0.78%	SSO	135	URD Cable Rejuvenation, Fault Indicator	0.13%	ED
66	Enhanced Customer Communications Outage Management	0.77%	ED	136	ECC Replacement of EMS Video Wall	0.11%	STO
67	External Outage Map Ifactor Upgrade	0.77%	ED	137	Electronic Site Safety	0.08%	ED
68	Contingency Analysis Program (CAP)	0.75%	ED	138	EPRI Stray Voltage Calibration Testing	0.08%	ED
69	East River Substation- Station Upgrade	0.75%	SSO			100%	
70	Transmission Fdr_ Pipe Support at Queensboro Bridge	0.75%	STO				

Source: DR 227-C Supplemental Attachment 4.

11. The optimization process does not completely optimize the capital project portfolio due to decision-making that occurs outside the model.

- The optimization model is designed to build an optimal capital portfolio based on “strategic value” as shown in **Exhibits IV-11, IV-12 and IV-14**. Major programs consisting of numerous projects are identified and contained within the portfolio with a common strategic value. However, operating groups have considerable discretion as to what projects within programs are actually executed. Both companies employ numerous capital project re-prioritization schemes for re-prioritizing and scheduling capital projects within programs.⁶⁵
 - The re-prioritization of projects within a program can have a significant impact, as most capital dollars are for programs, rather than standalone projects.
 - For example, in the 2016 budget, CECONY electric transmission and distribution programs and their associated projects represent 89 percent of the capital expenditures and standalone capital projects represent 11 percent of the capital expenditures.⁶⁶
- The nine strategic drivers are not capable of driving “strategic value” on their own. While they may well demonstrate the corporate value that the companies perceive, they do not identify or generate capital projects. Projects are identified and developed based on identified system needs – as discussed throughout this chapter. **Exhibit IV-13 and Exhibit IV-14** illustrate the differences between strategic value drivers and the determination of project values actually contained in the capital project plan.
- O&R provided a list of planned construction projects including cost, timing and priority for the next five years.⁶⁷ Strategic value scores for Electric, Gas and Common budgets for Fiscal Year (FY) 2014-2018 and FY 2015-2019 were provided.
- As O&R started utilizing the optimization model in 2013, many of the projects that NorthStar reviewed in detail were started prior to this and prioritization data was not prepared. As of the audit timeframe the FY 2016 – FY 2020 prioritization has not been finalized.⁶⁸

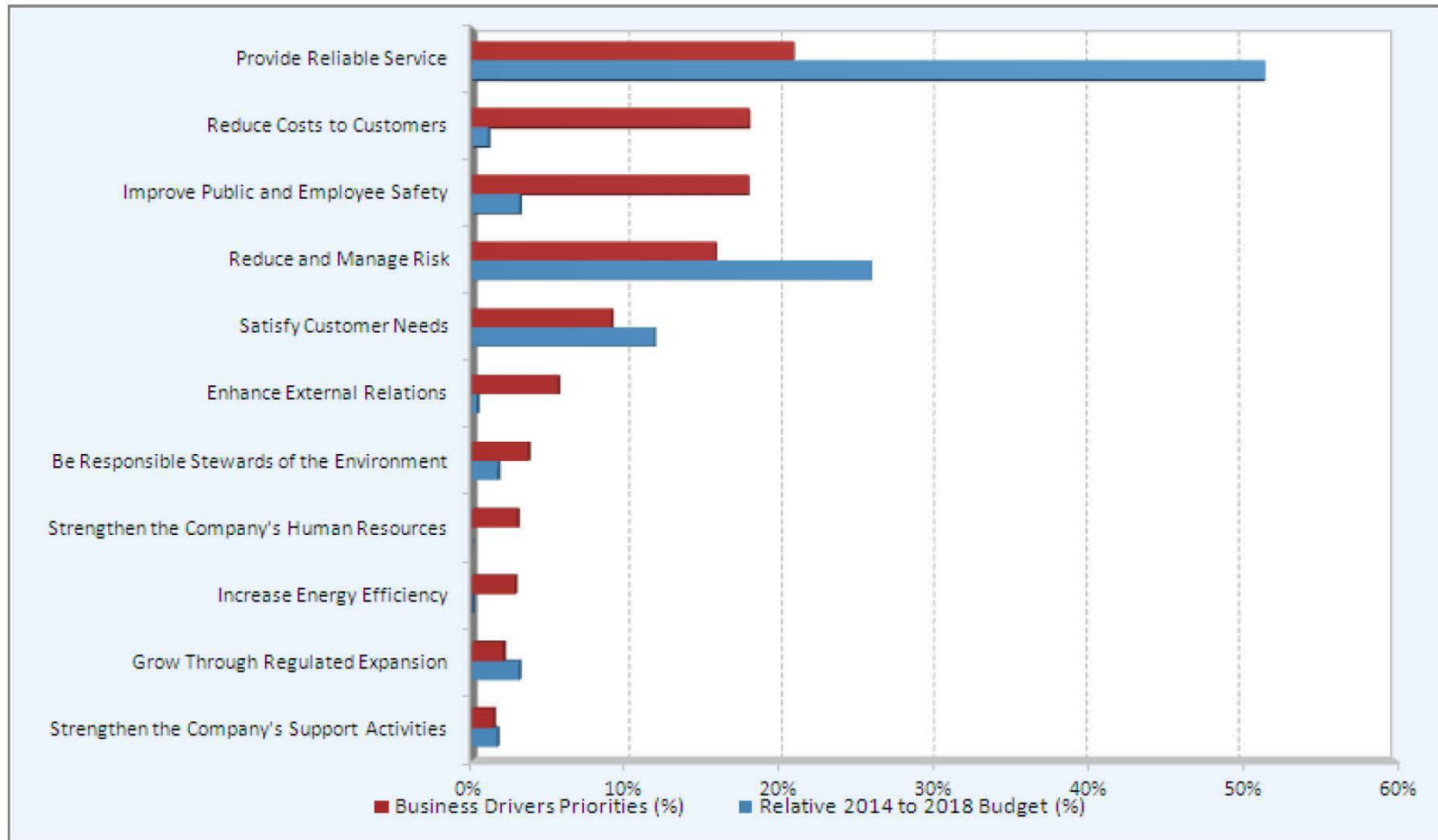
⁶⁵ DRs 74-B, 219-O through 221-O and 280

⁶⁶ DR 508-C Attachment 1 – 2016 Prioritization Scheme Draft v1.2

⁶⁷ DRs 176 and 227

⁶⁸ DR 227-O

Exhibit IV-13
2014-2018 Budget Portfolio – Strategic Alignment
(as of 2014)



Source: DR 227-O Attachment 1 page 11.

Exhibit IV-14 CECONY 2015 Project Optimization

Ref #	2015 Project Optimization	Strategic Value %	2015 Cost \$	Regulatory Mandated/ Operationally Required/ Strategic	0001	0002	0003	0004	0005	0006	0007	0008	0009	Organization
					Provide Reliable Service 23.72%	Reduce Costs to Customers 19.625%	Improve Customer Experience 8.3042%	Sustain Environmental Excellence 3.8612%	Enhance External Relations 5.0932%	Strengthen Company Processes 1.6138%	Reduce and Manage Risk 16.895%	Strengthen and Develop Employees 2.3294%	Improve Public and Employee Safety 18.6482%	
1	AMR - Bronx West - Unit 31, 32	5.21%	\$17,979,643	Strategic	None	Extreme	Extreme	Low	Strong	Extreme	None	None	Strong	Common - Customer Ops
2	Cybersecurity	5.00%	\$4,175,052	Strategic	Strong	Extreme	None	None	Extreme	Extreme	Strong	None	Moderate	Common - BSS
3	Scada Net	4.75%	\$1,231,755	Operational	Strong	Extreme	Moderate	None	Moderate	Extreme	None	None	Strong	Common - IR
4	Corporate Security Enterprise Security Software Suite	3.41%	\$5,123,702	Operational	None	Low	Moderate	None	Moderate	Moderate	Strong	None	Strong	Common - ESS
5	CCIN Facilities Improvements	3.39%	\$528,711	Operational	Strong	Extreme	Low	Low	None	Strong	None	None	Moderate	Common - IR
6	CCIN Modernization - SOMET Conversion	3.39%	\$194,945	Operational	Strong	Extreme	Low	Low	None	Strong	None	None	Moderate	Common - IR
7	Server Farm Infrastructure	3.34%	\$1,301,289	Operational	Strong	Extreme	None	Strong	None	Extreme	None	None	Low	Common - IR
8	NYISO Transmission Owner Data Reporting System	3.27%	\$1,440,358	Regulatory	None	None	Strong	None	Strong	Extreme	Moderate	Strong	None	Common - ESS
9	AMR - Strategic or Hard to Read	2.87%	\$1,624,128	Strategic	None	None	Extreme	None	Strong	Extreme	None	None	None	Common - Customer Ops
10	XMR Telecommunications Equipment Priority 1	2.80%	\$1,793,991	Operational	Moderate	Extreme	None	None	None	Extreme	None	None	Moderate	Common - General Equipment
11	XM2 - Vehicles - Tiers 1 and 2	2.68%	\$37,647,981	Operational	Low	Extreme	None	Extreme	Moderate	Strong	None	None	Low	Common - General Equipment
12	Corporate Security - ROLLOUT PROGRAM FOR OBSOLETE CAMERAS - COMPANY WIDE	2.63%	\$344,693	Operational	Strong	None	None	None	None	Moderate	Moderate	Moderate	Moderate	Common - ESS
13	Desktop Infrastructure	2.52%	\$1,361,635	Strategic	Low	Extreme	None	Low	None	Extreme	None	None	Moderate	Common - IR
14	XM5 Tier 1 - Equip needed to protect the safety of employees customers and property	2.42%	\$4,980,659	Operational	Low	None	None	None	None	Strong	None	None	Extreme	Common - General Equipment
15	TLC eLearning Initiatives	2.05%	\$596,010	Strategic	None	Strong	None	Moderate	Low	Extreme	None	Moderate	Low	Common - ESS
16	CCIN Expansion - Fiber Projects	2.04%	\$1,317,679	Operational	Moderate	Strong	None	None	None	Moderate	None	None	Moderate	Common - IR
17	New Technology	1.98%	\$697,829	Strategic	Moderate	Strong	None	Low	Low	Extreme	None	None	None	Common - IR
18	Meter Data Management System (MDMS) Expansion	1.94%	\$799,647	Regulatory	None	Low	Moderate	None	Strong	Extreme	Low	None	None	Common - Customer Ops
19	XM1 Tier 1 - Replacement of office furniture, partitions, cabinets, etc	1.92%	\$844,348	Operational	None	None	None	Low	None	Extreme	None	None	Strong	Common - General Equipment
20	XM5 Tier 2 - Equip beyond economical repair and needed operationally	1.81%	\$448,001	Operational	Low	None	None	None	None	Strong	None	None	Strong	Common - General Equipment
21	XM10 Tier 1 Computer Equipment Critical Infrastructure	1.67%	\$4,731,288	Operational	Strong	None	None	None	None	Extreme	None	None	None	Common - General Equipment
22	Business Systems Sustainability - Upgrade Applications to SQL Server 2008	1.67%	\$934,743	Operational	None	Extreme	None	None	None	Extreme	None	None	None	Common - IR
23	Business Systems Sustainability - Upgrade Applications to Windows 7	1.67%	\$149,003	Operational	None	Extreme	None	None	None	Extreme	None	None	None	Common - IR
24	Business Systems Sustainability - Upgrade Applications to Windows Server 2008	1.67%	\$1,216,854	Operational	None	Extreme	None	None	None	Extreme	None	None	None	Common - IR
25	XM7 Tier 1 - Security Cameras, Safety Equipment, other miscellaneous equipment	1.60%	\$1,192,021	Operational	Low	None	None	None	None	Moderate	None	None	Strong	Common - General Equipment
26	XM6 Tier 1 - Equip needed to protect the safety of employees customers and property	1.60%	\$5,392,899	Operational	Low	None	None	None	None	Moderate	None	None	Strong	Common - General Equipment
27	Allegro System Upgrade	1.50%	\$1,986,701	Operational	None	Moderate	None	None	Moderate	Strong	Moderate	None	None	Common - Finance
28	XM10 Tier 2 Computer Equipment Critical Infrastructure	1.46%	\$3,062,231	Operational	Strong	None	None	None	None	Strong	None	None	None	Common - General Equipment
29	CCIN Expansion - Mobile WiMAX Access Network	1.43%	\$799,647	Operational	Moderate	Strong	None	None	None	Moderate	None	None	None	Common - IR
30	Off System Billing	1.35%	\$993,350	Strategic	None	Moderate	Low	None	Moderate	Strong	Low	None	None	Common - Customer Ops
31	Conduct Maximo Upgrade SSO	1.28%	\$1,804,708	Operational	Low	Strong	None	Low	Low	Low	None	None	Low	Common - Substations
32	Environmental Management Information System (EMIS)	1.25%	\$600,853	Strategic	None	None	None	Moderate	Strong	Extreme	None	None	None	Common - EH&S
33	Facilities Buildings and Yards - (Critical Infrastructure - Short Term Priority and Programs)	1.25%	\$15,893,607	Operational	Low	None	None	Moderate	None	None	Low	Low	Moderate	Common - Facilities
34	Budget System Enhancements	1.22%	\$993,350	Operational	None	None	None	None	Strong	Extreme	Low	None	None	Common - Finance
35	Steam Billing System and Customer Service Enhancements	1.21%	\$273,171	Strategic	None	Low	Moderate	None	Low	Strong	None	None	None	Common - Customer Ops
36	Server Farm Infrastructure - Worth St	1.22%	\$14,900,256	Operational	Moderate	None	None	None	Low	Extreme	None	None	None	Common - IR
37	XM3 Tier 1 - Equip needed to protect the safety of employees customers and property	1.20%	\$406,280	Operational	Low	None	None	None	None	Strong	None	None	Moderate	Common - General Equipment
38	Power Tax Project	1.13%	\$1,092,189	Operational	None	Low	None	None	Moderate	Extreme	Low	None	None	Common - Finance
39	Customer Service System Improvements	1.11%	\$4,966,752	Operational	None	None	None	None	None	Low	Strong	None	None	Common - Customer Ops
40	Computer and Communications Accounting System	1.11%	\$112,249	Strategic	None	Strong	None	None	None	Strong	None	None	None	Common - IR
41	Matter Management System (formerly known as Case Management System)	1.04%	\$2,493,588	Strategic	None	None	Low	None	Moderate	Extreme	None	None	None	Common - Law
42	Irving Place Re-Stacking (Local Law 26)	0.97%	\$24,833,761	Regulatory	None	Low	None	None	Low	None	Low	None	Moderate	Common - Facilities
43	Facilities Buildings and Yards All Other (Safety Environmental Regulatory)	0.93%	\$2,483,376	Regulatory	None	Low	None	Moderate	None	None	None	None	Moderate	Common - Facilities
44	CNG Fuel Station Upgrades	0.92%	\$3,278,056	Operational	Low	Low	None	Moderate	Moderate	Moderate	None	None	None	Common - BSS
45	2015 - 2013 Compass Rewrite (Deferred 2011 based on P1 Deployment) Updated 01-2015	0.85%	\$248,338	Strategic	None	Low	None	None	None	Moderate	Moderate	None	None	Common - Construction
46	XM6 Tier 2 - Equip beyond economical repair and needed operationally	0.82%	\$732,099	Operational	None	None	None	None	None	Moderate	None	None	Moderate	Common - General Equipment
47	Facilities Buildings and Yards - (Storm Hardening Program)	0.79%	\$4,966,752	Operational	Low	None	Low	Low	Low	Low	None	None	Low	Common - Facilities
48	2015 - 2012 - Construction - Survey Mapping Repository - Updated 01-2015	0.76%	\$496,675	Strategic	Low	None	Low	Low	Low	Low	None	None	None	Common - Construction
49	Project Explorer - Metaphase Replacement 2	0.74%	\$548,329	Strategic	None	Low	None	None	Moderate	Strong	None	None	None	Common - Central Ops
50	CCIN Modernization - Mapping System	0.70%	\$248,338	Operational	None	Moderate	None	Low	Low	Moderate	None	None	None	Common - IR
51	XM3 Tier 2 Equip beyond economical repair and needed operationally	0.62%	\$3,973	Operational	None	None	None	None	None	Strong	None	None	Low	Common - General Equipment
52	Facilities Buildings and Yards - (Roof Replacement Program)	0.59%	\$2,980,051	Operational	Low	None	None	Moderate	None	None	None	None	Low	Common - Facilities
53	2016 - 2014 Conduct Maximo Upgrade Construction - Update 01-2015	0.52%	\$164,065	Strategic	Moderate	Low	None	None	None	None	None	None	None	Common - Construction
54	Empower Replacement	0.52%	\$1,207,317	Operational	Low	None	None	Moderate	Low	Low	None	None	None	Common - EH&S
55	AutoCAD (Engineering Equipment Upgrade Program)	0.45%	\$695,345	Strategic	Low	None	None	None	Low	Moderate	None	None	None	Common - Central Ops
56	Conduct Maximo Upgrade Steam	0.52%	\$1,312,515	Strategic	Moderate	Low	None	None	None	None	None	None	None	Common - Steam Production
57	CUS Enhancement	0.42%	\$198,670	Strategic	None	None	None	None	None	Strong	None	None	None	Common - Finance
58	Vehicle Fuel Station Upgrades	0.31%	\$2,185,371	Operational	Low	None	None	Low	None	Low	None	None	None	Common - BSS
59	Astoria - East Yard Restoration, Refurbishment and Drainage	0.28%	\$6,953,453	Regulatory	None	None	None	Moderate	Low	None	None	None	None	Common - Facilities
60	Telecom	0.21%	\$347,673	Regulatory	None	None	None	None	Moderate	None	None	None	None	Common - Customer Ops
61	Telecommunications Storm Hardening	0.00%	\$2,682,046	Operational	None	None	None	None	None	None	None	None	None	Common - IR
62	Astoria Warehouse Wireless and Hardware Upgrade		\$525,000	Strategic	Low	None	None	None	None	Strong	Low	None	None	Common - BSS
63	Portable Emergency Transformers		\$195,000	Strategic	Low	None	None	None	None	None	Low	None	None	Common - BSS
64	Microfile PDF Conversion		\$200,000	Strategic	Low	Low	None	None	Moderate	Strong	None	None	Low	Common - Central Ops
65	2015 - Public Improvement - Updated 01-2015		\$250,000	Strategic	Low	None	Low	Low	Moderate	Low	Low	None	Low	Common - Construction

Source: DR 228-C Attachment 1 page 1 of 10.

- O&R is facing additional problems related to properly implementing the optimization model and process. O&R stated that the prioritization is completed at a higher level than projects are typically budgeted, and many smaller projects of similar or related strategic value are rolled into larger programs for the optimization process.⁶⁹
 - Placing the corporate value on a program that covers multiple capital projects over an extended time period as described by O&R, causes errors in the optimization process model.
 - Combining capital projects into a single program also conflicts with the model's design and budgeting policy that all capital projects to be considered must have a white paper containing their scope, cost estimate and justification.
 - O&R claims to bundle projects of smaller projects of similar strategic value; however, this is in conflict with the optimization process in which the strategic value is the analytical product of PI360, and not known until the application program has been run against the project data input.
 - Prioritization must be completed prior to budget approval.

12. The capital project optimization work product is still evolving and does not yet appear to provide maximum value based on the nine corporate strategic drivers.

- At times, the projects included exhibit very low merit and projects excluded from the approved list exhibit more merit based on the strategic drivers. At times there are regulatory mandated and operationally required projects that exhibit lower merit than strategic projects which have been excluded from the approve list.
- NorthStar's detailed capital project reviews covering both companies and all business services showed that projects with minimal "strategic drivers value" were included.⁷⁰
- O&R was unable to provide the priority scoring for projects selected for NorthStar's detailed project review.⁷¹ See Chapter VI – Program and Project Planning and Management for a discussion of the detailed project review
- CECONY stated that each organization is at a different level of maturity in implementation of the optimization model to help with portfolio selection. The goal is that each organization enters the entire universe of potential work to be completed and those projects are vetted through the optimization process.⁷²

13. The companies' asset management programs are appropriately focused on maintaining system reliability and integrity.

- O&R produces annual electric planning studies that identify:
 - Transformer banks approaching and exceeding normal capacity rating.

⁶⁹ DR 227-O

⁷⁰ DRs 227-C Supplemental Attachments 1-4, 509-C Attachment 1 and 227-O Supplemental Attachment 1

⁷¹ DRs 510-O, 219-O and 230-O Attachments 1-7

⁷² DR 227-C Supplemental Answer

- Circuits and feeders contingency analysis to determine system capability during peak conditions.
 - Development of annual Distribution Summer Studies as guidance for Electric Operations and the Energy Control Center.⁷³
- CECONY routinely develops gas transmission and distribution system plans and planning studies. The CECONY planning section develops a number of projects that focus on supply and pipeline capacity to reliably operate the natural gas system. Long range plans are developed using system modeling software and key design elements. The gas long range plan provides plans for the gas delivery system for the next two decades.⁷⁴ Focused plans are prepared for programs and projects in the following areas:
 - Supply mains,
 - Regulators,
 - Gas transmission and generation,
 - Winter load relief projects, and
 - Integrated long range plans.
 - CECONY's Gas Main Replace Prioritization (MRP) and Storm Hardening initiatives are both proactive approaches in replacing mains that pose risks to both the public and property. In these instances, aging mains are replaced by the appropriate main size based on Planning's recommendations and pipes that are not leak prone can potentially provide more capacity.⁷⁵
 - CECONY and O&R Winter Load Relief (WLR) and New Business load analyses identify needed gas system reinforcements.
 - WLR reinforcement is based on the load seen on the system, whereas New Business is based on incoming load.
 - WLR mitigates risk by reinforcing areas predicted to be poor pressure locations in the next winter season. Potential poor pressure pockets are identified after modeling the coldest days of the previous winter.
 - New Business recommendations are to ensure increased customer load does not adversely affect the system upon connection.
 - In both cases, aging mains can be replaced during reinforcement
 - CECONY's Pipeline Integrity Management Plan, which addresses all Federal and State regulatory requirements, is currently used to assess and manage the safety and integrity of Gas Transmission assets.
 - External Corrosion Direct Assessment (ECDA) and other preventative and mitigating measures, are used to assess pipeline conditions, address threats; and perform repairs or replacements as required.

⁷³ DR 69-O

⁷⁴ DR 95-C

⁷⁵ DR 99-C

- CECONY also maintains a geospatial database known as Pipeline Integrity Information Management System (PIIMS), which contains all data collected through the program. PIIMS which allows data mining that is used to analyze and improve the program as well as the safety and integrity of the gas transmission system.
- CECONY's DIMP is used to identify and reduce gas distribution pipeline integrity risks.
 - The highest risks identified by DIMP are corrosion on unprotected steel and cast iron mains. A replacement program is underway to replace leak prone pipe.
 - The leak prone pipe replacement program replaced 52 miles in 2013, increased this to 72 miles in 2015 and plans annually increase miles to replace 95 miles of pipe in 2020.⁷⁶
 - Currently, about half of CECONY's distribution system consists of leak prone pipe. CECONY's distribution system is made up of 26.5 percent cast iron pipes, 24.5 percent unprotected steel, 42 percent plastic and 7 percent protected steel.⁷⁷
- PHMSA 49 CFR Part 192 requires a complete program evaluation at least every five years. CECONY has committed to performing the complete program evaluation every three years. The last complete program evaluation was completed in 2013 for year-end 2012. The current plan captures the most recent annual effectiveness review for year-end 2014.
- The O&R Gas DIMP is used for distribution asset management, aging distribution system, inspection/testing programs and their integration with gas system reliability issues.⁷⁸
- The O&R Transmission Integrity Guidelines addresses Federal and State regulatory requirements and are used to assess and manage the safety and integrity of Gas Transmission assets. O&R's gas transmission assets comprise 0.9 miles of pipeline located in areas considered to be non-high consequence areas for pipeline risk.⁷⁹

14. CECONY has two distinct distribution systems: network and radial that have entirely different performance characteristics. O&R operates a radial distribution system.

- Radial distribution systems are lines running through areas or neighborhoods (feeder) on the secondary distribution voltage. Customers are connected to feeders. In the simplest design, when the feeder has an outage, all customers on the feeder have an outage. There are modifications to the simple feeder design that include re-closers, feeder segmentation, and redundant systems, which increase the overall reliability of the radial design.

⁷⁶ DR 785, 821 and Gas Operations 5-Year Resource Plan

⁷⁷ DR 122-C

⁷⁸ DR 99-O

⁷⁹ DR 100-O

- A network distribution system can best be described as a grid of electric power on the secondary side of the distribution transformers. Customers are connected directly to the secondary grid. There are “infinite” redirections of power delivery in the event of a feeder outage. The vulnerability of a network distribution system is the service line between the network and the customer facility. Typically when one of these connections have an outage, it only affects the few or sole customers connected on the one feed instead of every customer on a radial system feeder. Network distribution systems are the most reliable configuration and also the most expensive.
- Large portions of CECONY’s network are underground providing immunity to wind, vegetation, and vehicle incursions.
- The PSC requires utilities to report two reliability indices: System Average Interruption Frequency Index (SAIFI) and Customer Average Interruption Duration Index (CAIDI). These metrics are part of each utility’s annual performance metric evaluation. CECONY and O&R report these metrics for their radial systems.
 - SAIFI measures, on average, how many times a customer is interrupted within a single year. It typically is measured in ‘per year’, but also can be measured in ‘number of months’ between customer interruptions.
 - The System Average Interruption Duration Index (SAIDI) measures the average length of time of an interruption per customer.
 - CAIDI measures on average, the length of an interruption. CAIDI is calculated by dividing SAIDI by SAIFI. It is typically measured in hours but also can be measured in minutes.
- CECONY’s network systems provided high levels of reliability. As a result of only a few or one customer per outage incident (instead of hundreds or thousands on a radial system), CECONY’s network system reported annual SAIFIs of about 0.02, representing a magnitude of almost 50 times less than the state average.
- CECONY has two distinct distribution systems: network and radial that have entirely different performance characteristics. Reporting CECONY reliability performance using utility-wide System Average Interruption Frequency Index (SAIFI) and (CAIDI) metrics when there are two types of systems included can be misleading. Reliability is best measured by separate metrics for each system. O&R operates a radial distribution system.
- CECONY’s network systems are not measured with the traditional SAIFI and CAIDI.
 - A proxy for SAIFI was developed for calculating frequency called “Frequency.” It is calculated by multiplying the number of network outages by 1,000 and then dividing by the number of network customers. It is equivalent mathematically to normalizing each outage as affecting 1,000 customers.

- A proxy for CAIDI was developed for calculating duration called the Network Outage Duration. It is calculated as the sum of the duration of all network outages divided by the total number of network outages.⁸⁰
- These two new metrics were originally calculated “all-in,” in that there were no exclusions for major storms.
 - In 2011 and 2012, New York City incurred two major weather events – Hurricane Irene and Superstorm Sandy, respectively. In those two years, CECONY did not meet its performance requirement with the new metrics and petitioned the PSC to exclude these events from the calculation.⁸¹
 - In Case 13-E-0030, the standard 16 NYCRR Part 97 10% / 24-hour Rule was applied to network outages allowing for the exclusion for extreme weather events.⁸²
 - The current reliability performance metric (RPM) is set at 2.50 for frequency and 4.7 for duration.⁸³

15. CECONY’s secondary network is exhibiting signs of age and deterioration.

- CECONY’s electric reliability performance metrics for its network system for the past five years is shown in **Exhibit IV-15** below.

Exhibit IV-15
CECONY Network Performance Metric (2010-2014)

Metric	2010	2011	2012	2013	2014	RPM
Adjusted for Weather per Case 13-E-0030						
Frequency: Customers Interruptions per 1,000 Customers	2.38	2.49	1.94	2.17	2.36	2.5
Network Outage Duration	4.47	4.58	4.75 [Note 1]	4.2	4.92	4.7
Unadjusted						
Frequency: Customers Interruptions per 1,000 Customers	3.09	3.34	3.65	3.08	4.08	2.5
Network Outage Duration	5.9	5.29	58.51	5.65	6.74	4.7

Note 1: In 2012, the RPM target was 4.9. CECONY met the requirement.

Source: DR 607; Case 09-E-0428, CECONY Electric Rates, CECONY’s Reports - 2011 Performance under Electric Service Reliability Performance Mechanism (filed 04/02/12), 2012 Performance under Electric Service Reliability Performance Mechanism (filed 04/01/13), and 2013 Amended Performance under Electric Service Reliability Performance Mechanism (filed 04/22/12); and Case 13-E-0030, CECONY Electric Rates,

⁸⁰ DR 604 and IR 183

⁸¹ Case 09-E-0428, CECONY Electric Rates, CECONY’s Report on 2011 Performance under Electric Service Reliability Performance Mechanism (filed 04/02/12).

⁸² DR 606 and Case 13-E-0030, CECONY Electric Rates, CECONY’s Report on 2014 Performance under Electric Service Reliability Performance Mechanism (filed 03/31/15).

⁸³ Case 13-E-0030, CECONY Electric Rates, CECONY’s Report on 2014 Performance under Electric Service Reliability Performance Mechanism (filed 03/31/15).

CECONY's Report on 2014 Performance under Electric Service Reliability Performance Mechanism (filed 03/31/15).

- In 2014, CECONY failed to meet its Network Outage Duration metric and incurred a negative revenue adjustment of \$5 million for not meeting its Ratepayer Performance Metric.⁸⁴
- **Exhibit IV-16** provides the number of cable failures by year for the past five years.

Exhibit IV-16
CECONY Cable Failures by Cause (2010-2014)

Cause/Year	2010	2011	2012	2013	2014
Defective Equipment	37	27	17	137	276
Insulation Breakdown	1,793	2,073	913	1,936	3,006
Overload	63	114	59	21	4
Other	12	36	28	51	83
Total	1,981	2,279	1,034	2,145	3,369

Source: DR 610.

- In 2014, CECONY incurred the largest number of cable failures in the past five years.
 - The 2014 failures represent over a 50 percent increase from 2013, and 2013 failures exhibit an increase of 100 percent from 2012.
 - CECONY attributes this increase in secondary cable outages to increases in the amount of salt used during the snow season on city streets melting into manholes.
 - The salt permeates existing cracks, breaks, or tears in the cables causing a ground fault and cable failure.
- CECONY is just beginning to address this issue from an analytical perspective through the use of a secondary reliability index model.

16. CECONY and O&R effectively maintain system reliability and both companies' radial system reliability has been good for many years.

- O&R reliability is consistent with other similar geographically situated utilities such as Central Hudson Gas and Electric Corporation, New York State Electric and Gas Corporation, and National Grid.
- CECONY radial system reliability is the best in the State. CECONY continues to improve the system by enhancing the 4kV distribution system with switches and fuses and has undertaken a storm-hardening program in the wake of Irene and Sandy.⁸⁵
- **Exhibit IV-17** provides the average five-year reliability indices in New York for radial systems as measured by SAIFI and CAIDI.

⁸⁴ Case 09-E-0428, CECONY Electric Rates, CECONY's Report on 2011 Performance under Electric Service Reliability Performance Mechanism (filed 04/02/12), page 2

⁸⁵ Case 13-E-0030, CECONY Electric Rates, CECONY's Report on 2014 Performance under Electric Service Reliability Performance Mechanism (filed 03/31/15).

Exhibit IV-17
Five Year Average Reliability Indices for Radial Systems in New York (2010-2014)

Utility	Excluding Major Storms		Including Major Storms	
	SAIFI	CAIDI	SAIFI	CAIDI
Central Hudson Gas and Electric	1.15	2.33	1.96	8.31
Consolidated Edison Radial Systems	0.40	1.99	0.77	21.88
Long Island Power Authority	0.72	1.20	1.18	7.43
New York State Electric and Gas	1.09	1.99	1.78	6.38
Niagara Mohawk (National Grid)	0.92	1.97	1.23	3.33
Orange and Rockland Utilities	1.02	1.66	1.60	11.84
Rochester Gas and Electric	0.76	1.78	0.90	2.45
Statewide (Adjusted for CECONY Radial Only)	0.87	1.85	1.35	8.80

Source: Case 13-E-0030, CECONY Electric Rates, CECONY's Report on 2014 Performance under Electric Service Reliability Performance Mechanism (filed 03/31/15).

17. CECONY develops accurate system-wide forecasts for natural gas, electricity and steam.

- CECONY's electric peak demand forecast is derived by using ordinary least squares (OLS) regression.⁸⁶ OLS is an accepted forecasting technique. The OLS forecast peak demand forecasts incremental growth.
- The model results are then adjusted for energy efficiency, distributive generation, demand response and advanced technology.⁸⁷ The peak temperature is probabilistic and specified as the temperature with a 1 in 3 probability of occurring in 30 years.
- CECONY's natural gas peak day utilizes a similar technique of developing a weather sensitive peak that is adjusted for growth, energy efficiency and demand response. An excel spread sheet model is used to develop the weather based peak day model.⁸⁸
- CECONY's gas and electricity forecasts both have a planning horizon of 20 years.
- A review of the 2013 through 2015 forecasts found demand forecasts to be consistent from year to year. **Exhibit IV-18** shows the predicted demands for the next five years for three subsequent forecasts. The variance from annual forecast to annual forecast by year is less than 2.5 percent. This consistency is helpful in planning future system infrastructure requirements.

⁸⁶ In its simplest form in this application, an OLS would typically be in the form of $D=aT+c$; where D=demand, a=coefficient, T=temperature, and c=constant. Using actual recorded demands and temperature, an OLS regression would estimate the values for a and c. Once these values are specified, demand can be predicted for any temperature including extreme highs and lows.

⁸⁷ DR 61 Confidential Response

⁸⁸ DRs 86 and 88

Exhibit IV-18
CECONY Peak Demand Forecast by Year

Forecast Year	2015	2016	2017	2018	2019
Electric					
2013 Forecast (MW)	13,600	13,800	13,950	14,100	14,275
2014 Forecast (MW)	13,900	14,075	14,250	14,450	14,600
2015 Forecast (MW)	13,775	13,825	14,000	14,125	14,250
Variance	2.21%	1.99%	2.15%	2.48%	2.46%
Gas					
2013 Forecast (MDt/day)	1,348	1,419	1,449	1,468	1,481
2014 Forecast (MDt/day)	1,340	1,408	1,435	1,457	1,470
2015 Forecast (MDt/day)	1,350	1,408	1,436	1,459	1,476
Variance	0.75%	0.78%	0.98%	0.75%	0.75%

Source: DRs 87-B Attachment 1 and 60-B Attachment 1

- CECONY forecasts are accurate. **Exhibit IV-19** is a comparison of weather adjusted actual demand to forecast demand. The variance is generally in the range of one to two percent.⁸⁹
- CECONY steam forecasts are also in the range of one percent.

Exhibit IV-19
CECONY Demand Forecast Accuracy

	Forecast Peak	Weather Adjusted Peak	Variance
Electric			
2010	13,500 MW	13,150 MW	3%
2011	13,275 MW	13,100 MW	1%
2012	13,225 MW	13,100 MW	1%
2013	13,200 MW	13,500 MW	-2%
2014	13,675 MW	13,600 MW	1%
Gas			
2013	1,215 MDt/day	1,211 MDt/day	0%
2014	1,265 MDt/day	1,283 MDt/day	-1%

Source: DRs 64 and 91.

18. O&R system-wide forecasts for natural gas and electricity are accurate.

- O&R's electric peak demand forecast methodology is similar to CECONY's. There are minor differences in how incremental load and demand side management is included but the regression models are similar.⁹⁰

⁸⁹ DRs 64 and 91

⁹⁰ DR 61 Confidential Response

- O&R's natural gas peak day (called peak demand) uses the same methodology as O&R electric demand forecast except the forecast is predicted for the coldest weather.⁹¹
- O&R's gas and electricity forecasts both have a planning horizon of 20 years, but O&R officially reports the 10 year forecast.
- A review of the 2013 through 2015 forecasts found demand forecasts to be consistent from year to year. **Exhibit IV-20** shows the predicted demands for the next 5 years for three subsequent forecasts. The variance from annual forecast to annual forecast by year is less than 1 percent. This consistency is helpful in planning future system infrastructure requirements.

Exhibit IV-20
Peak Demand Forecast by Year

Forecast Year	2015	2016	2017	2018	2019
Electric					
2013 Forecast (MW)	1,650	1,670	1,685	1,700	1,720
2014 Forecast (MW)	1,645	1,660	1,680	1,690	1,700
2015 Forecast (MW)	1,645	1,665	1,685	1,700	1,705
Variance	0.30%	0.60%	0.30%	0.59%	1.18%
Gas					
2013 Forecast (MDt/day)	218	219	220	222	223
2014 Forecast (MDt/day)	218	219	220	221	222
2015 Forecast (MDt/day)	216	218	219	220	221
Variance	0.93%	0.46%	0.46%	0.91%	0.90%

Sources: DRs 87-B Attachment 1 and 60-B Attachment 1.

- **Exhibit IV-21** shows a comparison of weather adjusted actual demand to forecast demand. The variance is generally only one percent or less.⁹²

Exhibit IV-21
Demand Forecast Accuracy

	Forecast Peak	Weather Adjusted Peak	Variance
Electric			
2010	1,595 MW	1,575 MW	1%
2011	1,600 MW	1,580 MW	1%
2012	1,585 MW	1,590 MW	0%
2013	1,620 MW	1,615 MW	0%
2014	1,630 MW	1,630 MW	0%
Gas			
2013	214 MDt/day	214 MDt/day	0%
2014	216 MDt/day	215 MDt/day	-1%

Source: DRs 64 and 91.

⁹¹ DRs 86 and 88

⁹² DRs 64 and 91

19. Demand forecasts are appropriately incorporated into system infrastructure requirements.

- Forecast electric system coincident peak demand and electric network load area independent peak demand are used to drive electric transmission and distribution system planning studies. Forecast electric system coincident peak demand for extreme weather is allocated across historical demand. This methodology is consistent with planning efforts at other utilities.
- Forecast demand day natural gas throughput is an input into the Synergee modeling.

20. CECONY and O&R have been effective in implementing their leak repair programs.

- The largest gas safety program is the systematic replacement of leak prone pipe mains and services. Leak prone pipe includes cast iron and bare steel buried pipes where moisture interacts with the metals causing corrosion and eventual natural gas leakage.
 - Leak prone pipe represents over 45 percent of natural gas system mains and 18 percent of services on the CECONY system.⁹³
 - Leak prone pipes represent a small portion of O&R's system: 18 percent of mains and 17 percent of services.⁹⁴
- The response and repair of system leaks shows proper attention to public safety and reliability.
- **Exhibit IV-22** shows the steady decrease in leak repair backlog for both Utilities, with the exception of an increase in CECONY's backlog in 2014.

Exhibit IV-22
Leak Backlog and Repairs – 2005 through 2014
Type 1, Type 2 and Type 2A Leaks

Year	Leak Backlog		Leaks Repaired	
	CECONY	O&R	CECONY	O&R
2005	91	44	6,445	528
2006	61	34	6,312	499
2007	42	29	7,509	374
2008	36	21	5,800	362
2009	33	20	6,592	339
2010	25	8	5,993	480
2011	11	8	6,032	520
2012	10	4	5,540	422
2013	13	0	5,267	406
2014	36	0	8,823	430

Source: Case 09-G-0454, Gas Safety, 2008 Gas Safety Performance Measures Report (issued June 2, 2009); Case 10-G-0225, Gas Safety, 2009 Gas Safety Performance Measures Report (issued June 3, 2010); Case 11-

⁹³ DR 122-C Appendix A

⁹⁴ O&R Fact Verification correction

G-0242, Gas Safety, 2010 Gas Safety Performance Measures Report (issued June 1, 2011); Case 12-G-0222, Gas Safety, 2011 Gas Safety Performance Measures Report (issued May 31, 2012); Case 13-G-0213, Gas Safety, 2012 Gas Safety Performance Measures Report (issued May 30, 2013); Case 14-G-0176, Gas Safety, 2013 Gas Safety Performance Measures Report (issued June 26, 2014); Case 15-G-0248, Gas Safety, 2014 Gas Safety Performance Measures Report (issued June 17, 2015)(collectively, NYS DPS 2008-2014 Gas Safety Performance Measures Reports).

- While CECONY incurred the largest leak backlog in 2014 since 2008, it also repaired more leaks in 2014 than in any previous year. CECONY attributes this increase in leak activity due to a concentrated public outreach program following the East Harlem Gas Explosion in 2014.
- CECONY has dedicated one-third of its natural gas budget to leak prone main and service replacement.

21. CECONY and O&R gas pipeline operations are in compliance with Federal regulations in 49 CFR Part 192 and New York State requirements.

- Subsections L and M require the development of operating and maintenance manual. Both O&R and CECONY have developed O&M manuals with supporting procedures that are in compliance with Sections L and M.⁹⁵
- Subsection N requires the implementation of an operator qualification program.
 - Until 2014, CECONY used an in-house certification program. CECONY adopted the Northeast Gas Association (NGA) Operator training and qualification program after the East Harlem Gas Incident when it was found that a number of workers had expired certifications. This NGA program provides a modern technical platform that permits the immediate identification of expired credentials and an interactive database management system.
 - NorthStar's review of CECONY's current program, as of December 2015, found that all personnel are currently certified for the work associated with their work class.⁹⁶
 - NorthStar selected a sample of CECONY employees with certifications expiring in January 2016. CECONY demonstrated that the necessary certifications were renewed on time.⁹⁷
 - O&R has traditionally subscribed to the NGA program.
- Subsection O requires the development of a transmission IMP. CECONY has developed an annual plan in compliance with Subsection O. O&R does not have any transmission pipelines covered under this requirement.⁹⁸ NorthStar reviewed CECONY's IMP and found:

⁹⁵ DR 110

⁹⁶ DRs 120 and 632

⁹⁷ DRs 886 and 887

⁹⁸ DR 121

- Chapters 1 through 19 address each subsection (a) to (p) of 49 CFR §192.9.⁹⁹
- 49 CFR Part 192.911 Subpart O requires transmission operators to develop various plans, conduct field assessments, and remediate corrosion. CECONY's IMP is detailed as to the requirements and the processes to meet these requirements. NorthStar evaluated a sample of supporting materials to verify that CECONY implemented the plan as detailed in the IMP. As summarized in **Exhibit IV-23**, NorthStar verified the following key elements.

Exhibit IV-23
IMP Supporting Documents

49 CFR Subpart P	Requirement	NorthStar Assessment
(c)	Risk assessment and prioritization ranking	Adequate
(d)	Current External Corrosion Direct Assessment (ECDA) Plan and Post Assessment Report	Adequate
(c) and (d)	Independent analysis from Det Norske Veritas ¹⁰⁰ verifying that CECONY may eliminate internal corrosion as a threat	Adequate
(d)	Cased ECDA	Adequate
(g)	Confirmatory Direct Assessment Plan for onshore buried pipelines	Adequate
(d)	Exposed pipeline ECDA	Adequate
(b)	Baseline Assessment Plan	Adequate
(e)	Plan for remediation – CECONY performs repairs as discovered	Adequate
(o)	Environmental, Health, and Safety Plan	Adequate
All sections	Training Plan	Adequate
(m)	Communication Plan	Adequate
(i)	Annual Reporting to PHMSA	Adequate

Source: DRs 371 through 382

- Subsection P requires the development of a DIMP. Both CECONY and O&R have complied with Section P. The companies' DIMPs contain twelve chapters that address all sections of 49 CFR Parts 192.1001 to 192.1015 Subpart P. The plans are supported with numerous appendices that include risk assessment, threat identification, risk prioritization, implementation plans, performance monitoring and continual evaluation. The DIMP risk analysis serves as a basis for focusing asset management activities. The areas of highest risk are then evaluated for inclusion in the MRP program.¹⁰¹
- Due to the overlaps between Federal and State requirements, NorthStar evaluated a sample of Title 16 NYCRR Part 255 requirements against CECONY and O&R's operating and maintenance procedures.

⁹⁹ DR 121

¹⁰⁰ Det Norske Veritas is an international certification organization with expertise in technical assessments

¹⁰¹ DR 122

- Title 16 NYCRR Part 255.625 specifies the requirements related to gas odorization. In particular, NorthStar reviewed where odorant was added and how it is tested. Both CECONY and O&R:
 - Have procedures stating that distribution mains and laterals are to be odorized.
 - Have established testing procedures.¹⁰²
- Title 16 NYCRR Part 255.615 specifies the requirements related to emergency plans. In particular, NorthStar reviewed emergency shut down procedures and notification of appropriate fire, police and other public officials of gas pipeline emergencies.
 - CECONY procedures for gas mains identify a four-step process for emergency shut downs: (1) Isolation; (2) Reduce pressure; (3) Maintain reduced operating pressure; and (4) Restore.¹⁰³
 - CECONY procedures for notification of appropriate fire, police and public officials is includes in its Gas Emergency Liaison Training and Response with External Public Safety Agencies. The procedures offers an ongoing program that educates, coordinates and trains appropriate agencies of the types of gas emergencies and how to react. This is annual program.¹⁰⁴
 - O&R procedures identify a seven-step process for emergency shut downs: (1) protect life; (2) protect property; (3) isolate the gas flow; (4) make safe; (5) eliminate hazards; (6) make repairs; and (7) restore service. Emergency shutdown and pressure regulation is through the identification of the affected system areas and closure of the appropriate valves.¹⁰⁵
 - O&R requires the establishment of liaisons with County emergency personnel. County emergency response plans are maintained by section managers and gas operations directors.¹⁰⁶

22. CECONY and O&R have leak prone pipe replacement programs that consider flood zone management, risk models and other factors to prioritize mains for replacement replaced.

- Each year CECONY and O&R conduct system threat analyses in support of their DIMP programs. Threats include, among others, corrosion and natural forces. Flooding is a component of natural forces.¹⁰⁷
- Following the threat analysis, CECONY and O&R use a relative risk assessment model to prioritize pipeline replacement. The prioritized list includes pipelines with corrosion and flooding in the top quartile.¹⁰⁸

¹⁰² DRs 110-O Attachment 41 and 110-C Attachment 61

¹⁰³ DR 110-C Attachments 37 and 109

¹⁰⁴ DR 110-C Attachments 78

¹⁰⁵ DR 110-O Attachment 4

¹⁰⁶ DR 110-O Attachment 4

¹⁰⁷ DR 122

- Top quartile pipelines are included for replacement in the capital budget. Currently CECONY replaces approximately 70 miles of leak prone pipeline annually. In 2016, CECONY launched its accelerated main replacement (AMR) program to increase pipeline replacements by 65 percent, to about 95 miles of leak prone pipe replaced per year.¹⁰⁹

23. CECONY's Accelerated Main Replacement Program is overly optimistic.

- CECONY plans to increase natural gas pipeline replacement by expanding its existing risk related capital main replacement programs for cast iron and unprotected steel – leak prone pipe (LPP). CECONY indicated that these two programs account for approximately 65 percent of the pipe mileage installed each year.¹¹⁰ NorthStar believes that LPP replacement (as shown in **Exhibit IV-24**) along with other main replacement is becoming more difficult and costly to perform.
- Pipe replacement from 2013 to 2015 increased from approximately 52 miles to 72 miles per year (approximately a 40 percent increase), requiring significant increases in funding and work management.¹¹¹ CECONY Gas capital expenditures were approximately \$500 million in 2013 and increased to \$647 million in 2015 (a 30 percent increase).
- **Exhibit IV-24** shows the expected replacement mileage CECONY will perform over the next five years – nearly doubling its previous replacement levels.

Exhibit IV-24
Forecast CECONY Gas Main Replacement Miles

Year	2016	2017	2018	2019	2020
LPP Expected Replacement	70	80	85	90	95
Total Main Replacement (LPP plus Other Main Replacement Work)	97	107.3	111.8	116.5	119.1

Source: DR 404-C and Gas Operations 5-Year Resource Plan (12-7-2015).

- As shown above, leak prone pipe replacement, combined with other main replacement work is projected to be 119.1 miles in CY 2020.¹¹²
- CECONY plans to hire an average of 151 mechanics per year to match the projected workload with ten percent overtime in five years.¹¹³ These projections nearly double the CECONY gas construction work force and triple the contractor labor force,

¹⁰⁸ DR 122

¹⁰⁹ DR 38

¹¹⁰ DR 404-C

¹¹¹ DR 785, 821 and Gas Operations 5-Year Resource Plan

¹¹² DR 404-C

¹¹³ DR 404-C Attachment 1

moving from a combined resource level of 749 in 2013 to 1,488 in 2020. Leak repair, new business and other related pipeline work is also projected to increase over this same time period.

- Pipeline replacement is targeted for more difficult, high-density service areas such as Manhattan versus less difficult service areas.
- CECONY Gas Operations has experienced steady increases in overtime from 16.4 percent in 2010, to 23.5 percent in 2014. Overtime for 2015 through April was 32.2 percent of straight time.¹¹⁴ Bringing the levels of overtime to ten percent alone would be a significant accomplishment as current overtime rates equate to the hiring of 83 mechanics.
- The projected budget request for Gas capital expenditures increases annually and at 2019 is \$766 million.¹¹⁵ Pipeline replacement mileage is projected to increase by 65 percent, but capital budget expenditures are projected to increase by only half over the same time period.¹¹⁶
- In summary, the Accelerated Main Replacement Program is dependent on:
 - Implementation of a work management system
 - Increasing the number of pipeline mechanics (151 per year)
 - Increased budget
 - Ten percent overtime¹¹⁷
- Challenges to the plan are highlighted by:
 - Practical limits in the number of qualified employees that can be obtained and productively employed
 - Practical limits in the number of qualified contractors
 - Limit to amount of street interruptions (e.g., in Manhattan) that will be tolerated by customers/businesses/government agencies.

24. CECONY's and O&R's pipeline excavation damage performance has improved continuously since 2005.

- Damage to buried facilities caused by excavation activities is a leading cause of pipeline failure and accidents nationwide.¹¹⁸

¹¹⁴ DR 191-C Attachments 1 through 6; DR 404 identifies 257 CECONY Gas Mechanics and DR 191-C Attachment 6 provides an overtime rate of 32.2% for 2015. $40 \text{ hours/week} \times 0.322 = 13 \text{ hours/week OT per mechanic}$. $13 \text{ hours} \times 257 \text{ mechanics} = 3341 \text{ hours in OT per week}$. $3341 \text{ hours} / 40 \text{ hours/week} = 83 \text{ mechanics}$

¹¹⁵ DR 183-C, DR 404 and Gas Operations 5-Year Resource Plan (12-7-2015)

¹¹⁶ 72 miles of pipe replacement in 2013 and 119 miles of pipe replacement projected in 2020.

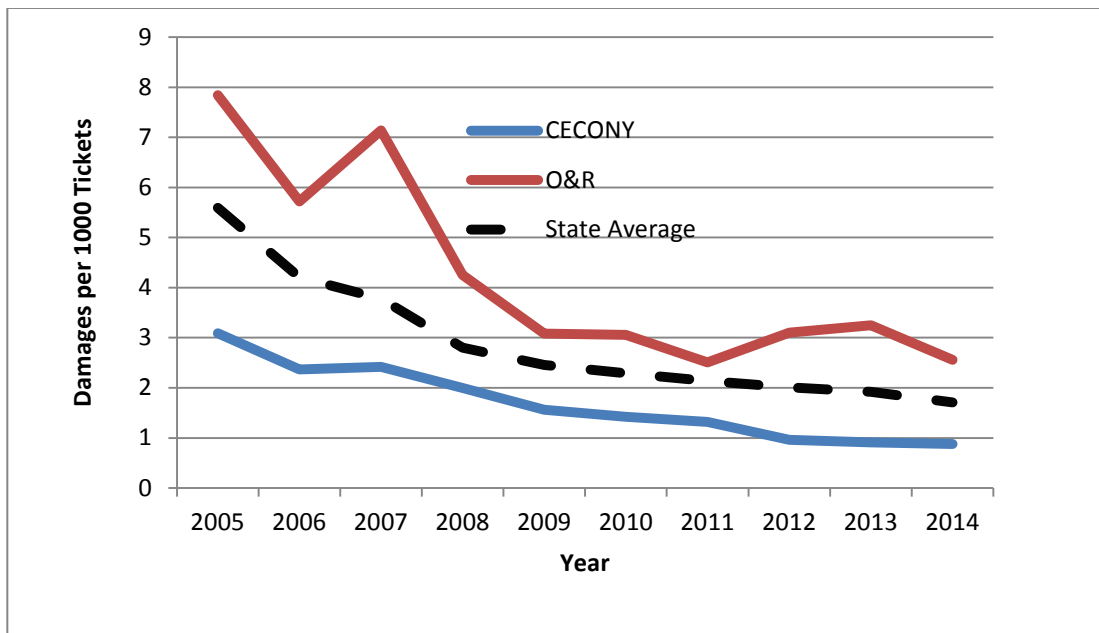
¹¹⁷ DR 404 and 578

¹¹⁸ US Department of Transportation -

https://opsweb.phmsa.dot.gov/pipelineforum/docs/Secretarys%20Infrastructure%20Report_Revised%20per%20PHC_103111.pdf

- Both utilities' DIMPs identify excavation damage as a primary threat, and specify mitigation measures including damage prevention monitoring, public outreach programs, detailed procedures for marking gas facilities, and one-call ticket procedures.¹¹⁹
- Exhibit IV-25** shows the historical performance of excavation damages per 1,000 tickets for CECONY and O&R. CECONY is below the state average and O&R is slightly above the state average.

Exhibit IV-25
Excavation Damages per 1,000 Tickets



Source: NYS DPS 2008-2014 Gas Safety Performance Measures Reports.

- Both utilities have effective public safety outreach programs, as measured by damages resulting from failure to call before digging (no call).
 - In 2014, CECONY processed in excess of 213,000 excavation tickets. There were 42 incidences of excavation damage due to no call situations. The number of annual incidences has remained fairly constant over the past few years and represents 0.0002 percent of all tickets. The number of incidences has greatly decreased since 2005, when there were 110 incidences.
 - Similarly, O&R processed approximately 26,000 excavation tickets and reported 19 incidences of no call damage. O&R's number of damages to no call has steadily decreased since 2005, when there were 44 incidences.

¹¹⁹ DR 111

25. CECONY and O&R demand response (DR) initiatives appear to be effective. However, DR programs represent in total approximately one percent of peak demand and require significant increases in enrollments to achieve appreciable demand savings.

- Load forecasts are adjusted for anticipated distributed generation, energy efficiency, demand response, and advanced technology when they are known and can be quantified.¹²⁰
- System planning develops solutions to the adjusted system forecast load.
- CECONY categorizes DR programs as Contingency or Peak Shaving.
 - Contingency programs are programs available to residential and commercial customers that allow CECONY to reduce load in system critical situations. The programs include a variety of options based on customer size and methods of economic incentive. CECONY has two contingency DR programs:
 - Distribution Load Relief Program (DLRP) – NYC and Westchester County
 - Direct Load Control (DLC) – NYC and Westchester County.
 - Peak Shaving Programs are temperature-based programs available to residential and commercial customers to assist CECONY in reducing coincident electric peak demand. As with the contingency programs, there are a variety of options based on customer size and methods of economic incentive. CECONY has three peak shaving DR programs:
 - Commercial System Relief Program – NYC only
 - Residential Smart Appliance Program – NYC only
 - DLC – NYC and Westchester County.¹²¹
- In compliance with the PSC’s December 2014 Order,¹²² O&R implemented distribution-level DR programs in 2015.
 - The PSC’s December 2014 Order directed O&R to develop dynamic load management programs, including distribution-level demand response programs. All electric distribution utilities not having distribution-level demand response programs were ordered to file tariffs to implement such programs within 90 days of the date of the Order.
 - The Order required implementation of the distribution-level demand response programs to commence by Summer 2015.¹²³

¹²⁰ DRs 61-C Attachment Confidential Response and 76-C Attachment 1

¹²¹ DR 76-C Attachment 1

¹²² Case 14-E-0423, Dynamic Load Management Programs Development, Order Instituting Proceeding Regarding dynamic Load Management and Directing Tariff Filings (issued December 15, 2014).

¹²³ DR 76-O

- O&R filed a compliance tariff on March 23, 2015, and its tariff was amended to allow the Company to recover all costs relating to the distribution-level demand response programs through its Energy Cost Adjustment mechanism which is a non-by passable charge.
- O&R implemented three new distribution-level demand response programs:
 - Direct Load Control Program (DLCP)
 - Commercial System Relief Program (CSRP)
 - Distribution Load Relief Program (DLRP).¹²⁴
- O&R includes DR impacts in its planning process.
 - Any demand response initiatives that are funded for the system or a portion of the system are provided to Engineering from Customer Energy Services. Engineering incorporates a review of all demand response initiatives into its electric planning process.
 - Historically, demand response initiatives on the O&R system have had minimal impact on system improvements since the small reductions that are obtained have been spread over a large area.

26. The REV reforms envisioned are comprehensive and in their early stages of development. Considerable progress has been made to date, yet, ongoing development and implementation will take some time.

- Changes in technology, markets, customer expectations and environmental demands, have led the Commission to conclude that its statutory duties can no longer be met by continuing the standard utility model. To accommodate these changes, the PSC has begun the REV initiative which involves numerous activities designed to transform the electricity sector.¹²⁵ Some of the PSC’s most important activities to date are identified below. CECONY and O&R are participating actively and contributing in each of these activities.
- In April 2014, the PSC instituted its REV proceeding,¹²⁶ and adopted the following six objectives:
 - Enhanced customer knowledge and tools that will support effective management of the total energy bill,
 - Market animation and leverage of customer contributions,
 - System wide efficiency,
 - Fuel and resource diversity,
 - System reliability and resiliency, and
 - Reduction of carbon emissions.¹²⁷

¹²⁴ DR 76-O

¹²⁵ Case 14-M-0101, Reforming the Energy Vision, Order Adopting Regulatory Policy Framework and Implementation Plan (referenced as the “Track One Order” or “Framework Order”)(issued February 26, 2015), p. 48.

¹²⁶ Case 14-M-0101, Reforming the Energy Vision, Order Instituting Proceeding (issued April 25, 2014).

- DPS Staff articulated the REV vision in two documents and the proceeding was separated into two tracks. Track One focused on developing distributed resource markets and Track Two focused on reforming utility ratemaking practices.¹²⁸
- In this proceeding, the PSC examined the establishment of a DSP to manage and coordinate DER, and provide customers with market data and tools to manage their energy use. The PSC also examined how its regulatory practices should be modified to incent utility practices to promote REV objectives. Following the proceeding, a two phased schedule with policy determinations for the DSP and related matters was expected in early 2015 and for regulatory design and regulatory matters, later in 2015.
- On August 22, 2014, DPS Staff issued a straw proposal in the REV proceeding for Track One in which it stated that “[t]he reforms envisioned in this proceeding are comprehensive and transformative, and the on-going design and pragmatic implementation of them will take years.” DPS Staff recommended, among other things, that:
 - The PSC should adopt the basic elements of the REV vision and proceed with implementation as proposed in the straw proposal.
 - Existing utilities should serve as DSPs subject to performance reviews.
 - Customers and energy service providers should have access to energy usage information to enable customers to assess the economic value of off-peak usage.
 - Where utility affiliates participate in DSP markets within the service territory operated by their parent company, appropriate market power protections must be in place.
 - As part of the transition toward market-based approaches to increase levels of efficiency and renewable energy, utilities should integrate energy efficiency into their regular operations and should take responsibility for procurement of renewable energy.
- In December 2014, the PSC encouraged utilities and third parties to begin working together to develop potential demonstration projects that will inform decisions with respect to developing DSP functionalities, measuring customer response to programs and prices associated with REV markets, and determining the most effective implementation of DER.
- The PSC believes that the ratemaking paradigm should be used to encourage, not deter or delay the realization of customer benefits through optimal investment in and management of the system including the deployment and use of DER. Misalignment between utilities’ financial interests and operational changes or transactive obligations that improve economic and efficient energy delivery, including support of

¹²⁷ Case 14-M-0101, Reforming the Energy Vision, Order Adopting Regulatory Policy Framework and Implementation Plan (referenced as the “Track One Order” or “Framework Order”)(issued February 26, 2015) and CEI 2014 Annual Report.

¹²⁸ Case 14-M-0101, Proceeding on Motion of the Commission in Regard to Reforming the Energy Vision, Order Instituting Proceeding (issued April 25, 2014) and DPS Staff to issue a straw proposal on Track Two by June 1, 2015.

the continued growth of DER penetration, introduces friction that is detrimental to the successful achievement of REV's objectives and its attendant benefits. Accordingly, the focus of the ratemaking reforms discussed in the DPS Staff white paper is to identify mechanisms that will reduce or eliminate this friction and achieve the desired alignment of interests.¹²⁹

- On January 8, 2015, Administrative Law Judge (ALJ) Julia Bielawski issued the Ruling that commenced the Market Design and Platform Technology (MDPT) Working Group Process and directed DPS Staff to immediately select, convene and coordinate with the Rocky Mountain Institute and the New York State Smart Grid Consortium, two closely related groups to address market design and platform technology.¹³⁰
- Highlights of the MDPT Working Group report in support of the Commission's REV proceeding included the following.¹³¹
 - The MDPT sought to develop recommendations for consideration by the DPS Staff as they develop guidance for New York utility DSIPs on near- and mid-term DSP market design and platform technology issues.
 - The MDPT Working Group and advisors comprised a wide range of industry experts from across New York and the nation.
 - The MDPT looked for common ground on many issues but it did not seek consensus nor resolve non-consensus issues. Instead, the MDPT report attempted to capture key themes and areas of non-consensus and, in many cases, suggested next steps in the REV process to address them.
 - The MDPT report identified several staged improvements to distribution system planning, market operations, grid operations and data access. These steps are essential to optimize interactions between the bulk system operator, utilities, DER providers, and customers.
 - A fundamental assumption of the MDPT group was that the DSP market structure, products and the DSP involvement and support of such markets should complement and not replicate the existing markets of the New York Independent System Operator (NYISO).
- The MDPT report addresses the general purpose of DSPs in REV and recommends:
 - DSP market participants should continue to have the ability to interact directly with NYISO programs.
 - The foundational responsibility of the DSP should be to proactively manage and optimize distribution planning, grid operations, and DER markets at the

¹²⁹ Case 14-M-0101, *Reforming the Energy Vision*, DPS Staff White Paper on Ratemaking and Utility Business Models (issued July 28, 2015).

¹³⁰ Case 14-M-0101, *Reforming the Energy Vision*, Report of the Market Design and Platform Technology Working Group (issued August 17, 2015), p. 15.

¹³¹ Case 14-M-0101, *Reforming the Energy Vision*, Report of the Market Design and Platform Technology Working Group (issued August 17, 2015) and DR 451.

distribution level – primarily for the purpose of cost effectively maintaining a safe and reliable system.

- The overarching DSP mission for the first five years of market development is to effectively procure DERs, using market means to the maximum extent appropriate, to directly address distribution system operational needs and to avoid or defer the need for future distribution system capacity additions.
- While the electric utility hosting the DSP function will continue in its role as a retail energy service provider and provider of last resort (POLR) for all utility customers, the specific DSP functions do not include the purchase of energy for reselling from DER providers.
- DSP should begin investing in platform technologies to enable the functions and capabilities needed to support the continued and accelerated growth of DER markets.

27. The REV scope envisioned is broad and includes numerous emerging regulatory process interrelationships and technological capabilities.

- The MDPT report proposed several broad DSP functions and capabilities for consideration:
 - Enhanced distribution planning – to integrate DERs into the distribution system, and improve coordination between distribution and transmission system planning activities.
 - Expanded distribution grid operations – expanding grid operations to better optimize load, supply and other power parameters at the local distribution level.
 - Distribution market operations – managing market operations and processes, and administering markets.
 - Data requirements – making customer and distribution system data available to market participants at a degree of granularity and in a manner that will best facilitate market participation.
 - Platform technologies – including geospatial models of connectivity and system characteristics, sensing and control technologies, optimization tools for DER capabilities and generation output (existing and new DERs).
- A central element of the REV is the creation of a system operator at the retail/distribution level. The Track One Order and the MDPT report recognized that the functional center of the REV framework is the distributed system platform “provider” – the electric distribution utility.
- The role of the electric utility in the REV is still being defined. REV documents have not clearly differentiated the DSP from the electric utility and use DSP when referring to the physical system as well as the provider entity.
- The following DSP definition was developed by the MDPT:

The DSP is an intelligent network platform that will provide safe, reliable and efficient electric services by integrating diverse resources to meet

customers' and society's evolving needs. The DSP fosters broad market activity that monetizes system and social values, by enabling active customer and third party engagement that is aligned with the wholesale market and bulk power system.

- The electric utility, situated between NYISO wholesale markets, DSP market participants, and end-users, will integrate DER into the current electric distribution delivery system. Utility grid operations will incorporate DSP market commitment and performance data into utility planning and operations to allow for an optimized, secure and more flexible power system, balancing supply and dynamically controllable demand side resources including distribution-level ancillary services.¹³² While dynamic load management of the electric distribution system appears to be a necessity for REV functionality, serving as a dispatcher for DERs, market participants argue that the electric utility should not dispatch beyond the meter DERs or permitted to provide value-added services. These conflicts present barriers to implementation based on new roles and responsibilities, information requirements and technology advancements at the utility and beyond the meter that have not been determined.
- The REV may impact other regulatory proceedings such as utility rate cases, valuing net metering and energy efficiency programs. These interrelationships do not yet appear to be fully defined or formalized.
- A Distribution Planning Working Group was proposed in the DSIP Guidance document. The utilities commented that they should assume a leading role in the process, thereby suggesting that questions regarding leadership and conflict resolution remain.¹³³
- The preliminary guidance issued by DPS Staff outlines a two-phased approach, with an initial Distributed System Implementation Plans (DSIPs) filed by each utility and a Supplemental DSIP to be developed by the utilities jointly.¹³⁴ Initial DSIPs were due mid-2016. Once the initial DSIP is filed, it will be updated and filed bi-annually.
- There are numerous issues and concerns about customer data privacy and the sensitivity of system data that must be resolved for successful REV implementation. This position was previously shared in the Track One process.¹³⁵
- The DSIP is intended to be a multi-year plan filed with the PSC, subject to public comment and updated regularly. The DSIP will contain (among other things) a proposal for capital and operating expenses to build and maintain DSP functions, as

¹³² Case 14-M-0101, Reforming the Energy Vision, Order Adopting Regulatory Policy Framework and Implementation Plan (referenced as the "Track One Order" or "Framework Order")(issued February 26, 2015), p. 32.

¹³³ DR 451-B

¹³⁴ DR 833-B Attachment 00 REV Program Summary, p. 1, and Case 14-M-0101, Reforming the Energy Vision, Staff Proposal: Distributed System Implementation Plan Guidance (reference as "DSIP Guidance") (issued October 15, 2015), p. 4 – Recommended Two-Phase Approach to the Initial DSIP Filings.

¹³⁵ DR 451-B

well as the system information needed by third parties to plan for effective market participation.¹³⁶

- Publicly sharing detailed system information in the DSIP at a level of detail necessary for major business/investment decisions that will need to be made has been found to be challenging as illustrated by the classification of numerous “confidential” data responses noted in this audit.
- The Track One document provided some preliminary guidance on what to include in the DSIP. However, final guidance has been delayed based on the “complexity of issues presented and concerns expressed by parties over the number of impending filings and comment periods.” As of January 2016, development of the DSIP did not reflect final guidance from the Staff.¹³⁷

28. CECONY and O&R have reorganized to focus on REV initiatives and support foundational elements.

- CECONY and O&R have restructured various aspects of their organizations, identified barriers and developed project management organizations to address REV implementation activities. A distributed resource integration group was established in July 2015 in each of the companies under a newly created vice president at CECONY and a director at O&R.¹³⁸
- The Distributed Resource Integration Groups are organizationally and functionally separate from system planning and designed to focus on various areas of REV and DER integration as noted below:¹³⁹
 - Utility of the future
 - Demonstration projects
 - Energy efficiency
 - Distributed resource integration
 - Project management organization.
- While REV long term objectives will transform the current utility model, CECONY and O&R are currently engaged in supporting foundational elements of REV-related initiatives through the following activities:
 - Supporting interconnecting DER to the systems and working with DPS Staff and various stakeholders on the New York State Standard Interconnection Requirement (NYSSIR). The companies are making upgrades to the interconnection process and systems.

¹³⁶ Case 14-M-0101, Reforming the Energy Vision, Order Adopting Regulatory Policy Framework and Implementation Plan (referenced as the “Track One Order” or “Framework Order”)(issued February 26, 2015), p. 32.

¹³⁷ DR 454-B and DR 833-B Attachment 00 REV Program Summary

¹³⁸ DR 82-B Supplemental

¹³⁹ DR 1

- CECONY and O&R have energy efficiency, demand side management and demand response programs in place that can be expanded to meet REV objectives.
- Including Energy Efficiency and Demand Response in the companies forecasting systems for multiple planning cycles and incorporating a more granular view of DER assets (including solar, combined heating and power, and batteries) in the most recent forecasting cycles.
- CECONY and O&R have experience evaluating non-wire alternatives for deferral of utility investments – such as the Brooklyn Queens Demand Management and Pomona Demand Management programs.
- The deployment of AML.

29. CECONY and O&R have several REV demonstration projects and related initiatives currently underway, but the projects are at different stages, making it more difficult to integrate their end products.

- CECONY and O&R operate different distribution management systems and have begun evaluating the future needs for information systems (IS) to support REV.¹⁴⁰ While the companies characterize these efforts as “existing IS initiatives” and “system enhancements,” NorthStar found that they are not currently used in system planning and would be more accurately described as new development efforts. These initiatives include:
 - Digital Customer Experience (DCX)
 - Advanced Distribution Management System (ADMS)
 - Advanced Metering Infrastructure (AMI)
 - Customer Information Systems (CIS)
 - Remote Radio Communication Systems
 - Geographic Information Systems (GIS)
 - Distributed Energy Resources Management Systems (DERMS)
 - Demand Response Management System (DRMS).
- CECONY and O&R have worked with DPS Staff and reviewed its Preliminary DSIP Guidance to develop an understanding of the scope of the initial and supplemental DSIP topics summarized in **Exhibit IV-26**.¹⁴¹
- As noted in **Exhibit IV-26**, the companies are beginning to determine the information system requirements to facilitate the utility role in an environment with more DER and more energy products and services. Since these efforts are in the early stages, the companies are not yet in a position to produce a complete view on the long term IT requirement and costs associated with a DSIP and DSP.¹⁴²

¹⁴⁰ DR 454-B

¹⁴¹ Case 14-M-0101, Reforming the Energy Vision, Initial Comments of the Joint Utilities on the October 15, 2015 Staff Proposal: Distributed System Implementation Plan Guidance (reference as “DSIP Guidance”), (issued December 7, 2015).

¹⁴² DR 454-B and DR 833-B Attachment 00 REV Program Summary

- The development and execution of demonstration projects, in accordance with REV Track One demonstration objectives provide an opportunity for the companies to demonstrate new revenue stream opportunities and evaluate REV technologies, products and services. The Companies are also deploying Non-Wires Alternatives (NWA) to defer traditional utility infrastructure investment.

Exhibit IV-26
Distributed System Implementation Preliminary Plan Topics and Timing

DSIP Topic	Category 1 June 2016	Category 2 Supplemental Filing	Category 3 Longer Term
System Planning			
Demand Forecasting		x	
DER Forecasting		x	
Storage Methodology		x	
Probabilistic Planning Methodology		x	
Hosting Capacity Methodology	x		
Load Flow Analysis Process		x	
Improved Interconnection Process	x		
Grid Operations			
AMI Rollout Policy	x		
Cyber Security		x	
Granular Pricing			x
NYISO Topics			
Roles and Responsibilities			x
Coordinated DER Dispatch and Tools – Demand Response		x	
Coordinated DER Dispatch and Tools - Other			x
Coordination at T&D interfaces			x
Data Access			
Customer Data	x		
System Data	x		
Market Participant Rules		x	
Settlement Procedures			x
DER Procurement Approaches	x		
Joint System Planning and System Operations		x	

Source: DR 833-B Attachment 00 REV Program Summary.

- It is difficult to correlate the DSIP topics shown previously in **Exhibit IV-26** with the demonstration project objectives, NWAs and AMI plans, shown in **Exhibit IV-27** below.

Exhibit IV-27
CECONY and O&R REV Related Demonstration Projects and AMI

REV Project	Project Primary Objectives	Project Partners
CONnectED Homes ¹⁴³ (CECONY REV Related)	1) Accelerate adoption of solar, smart thermostats and high-efficiency products and appliances among residential customers 2) Generate new revenue through 3rd party partnerships	Opower Enervee Nest Sunpower Homeserve
Clean Virtual Power Plant (VPP) ¹⁴⁴ (CECONY REV Related)	1) Provide customer fee-based resiliency service provided by integrated solar/storage system 2) Generate wholesale market revenues via aggregation and dispatch of hundreds of individual systems 3) Incent residential storage through new rate design	Sunower Sunverge
Building Efficiency Marketplace ¹⁴⁵ (CECONY REV Related)	1) Identify and execute more energy-efficiency project opportunities through advanced data analytics of customers' interval meter energy data 2) Generate revenue from value-added services to customers and market partners including project development and bid management	Retroficiency
Customer Engagement and Marketplace Platform (O&R REV Related)	1) Motivate customers to participate in O&R EE programs 2) Increase adoption of DERs by residential customers through promotion of products and services 3) Generate revenue for O&R and marketplace partners	Simple Energy
BQDM (Non-Wires Alternative) (CECONY Demonstration Project)	1) Cost effectively procure a 52 MW portfolio of customer-side and non-traditional utility-side solutions to enable deferral of a major new substation 2) Select a portfolio of diverse DERs with varying reliability and operational profiles that, together, meet the reliability needs of the constrained area. 3) Utilize the BQDM to inform the DSIP/DSP and create a framework for future NWA.	Multiple via RFP process
Pomona (Non-Wires Alternative) (O&R Demonstration Project)	1) Reduce electric load in Pomona, Rockland County, New York by 6.0 MW 2) Evaluate and select diverse distributed energy resources ("DER") and demand management ("DM") alternatives that will serve to stimulate the developing DER marketplace, meet REV goals and provide the best aggregate of solutions. 3) Improve electric reliability and delivery system resiliency.	Multiple TBD
AMI Deployment (AMI)	1) Provide the infrastructure for the smart grid of the future envisioned by the Commission in the REV proceeding. 2) Provide actionable usage information to customers at a detailed level to help them better manage their energy needs 3) Improve the outage management through AMI data and systems 4) Develop a cybersecure network for communicating with meters, DA devices. 5) Allow for more innovative rate design such as critical peak pricing to help optimize system peak load and energy usage 6) Enable conservation voltage optimization	

Source: DRs 833 - 836

¹⁴³ DR 833-B Attachment 31 CONnectED Homes

¹⁴⁴ DR 833-B Attachment 33 Clean VPP

¹⁴⁵ DR 833-B Attachment 32 Building Efficiency Marketplace

- CECONY and O&R have developed project implementation plans for each of the projects that define the program design, the project structure and governance.¹⁴⁶ The implementation plans including project partners, work plans and budgets, and reporting structure. This structured approach to project execution and reporting should support measurable results that can inform the companies as well as external stakeholders as REV progresses.
- The various REV-related programs are in various stages of maturity and performance capability adding another level of complexity to the DSIP.

30. The Utility Shared Services organization has appropriately consolidated and standardized the Supply Chain function for CECONY and O&R.

- The Utility Shared Services organization Supply Chain Department (Supply Chain), includes Purchasing and Stores functions, effective September 2014.¹⁴⁷
 - Purchasing functions include: sourcing, bid negotiations, total cost of ownership analysis, contract management, supplier and customer relationship management, inventory replenishment, management of supplier master data and supplier diversity.
 - Stores functions include: order fulfillment, front-line customer relationship management, cable and pipe yard operations, materials and equipment receipt, and physical inventory cycle counting.
 - Prior to September 2014, the Stores function was in the Central Field Services Organization.
- Procurement activity and spending on materials, equipment and services is processed in Oracle. There are three major contract types:
 - A Blanket Purchase Agreement (BPA) is an agreement (contract) with a supplier for specific goods or services at a pre-negotiated price. A BPA includes contract start/end dates, priced line items, terms and conditions, and a total maximum dollar limit. Releases against the BPA, which will result in a Standard Purchase Order (SPO), do not require Supply Chain intervention.
 - A Contract Purchase Agreement (CPA) is an agreement with a supplier for unspecified goods or services. It includes contract start/end dates, terms and conditions, and dollar amount. It can be used when it is hard to predict specific goods or services that will be procured from the vendor but where an overall pricing structure may have been agreed to. In addition, CPA releases will result in SPO and will require Supply Chain intervention.
 - A Standard Purchase Order often referred to as a “spot purchase order,” is an order for goods and/or services. SPOs are generated on the basis of an approved requisition. SPOs may be generated on a standalone basis (spot buy) or they may be issued under the provisions of a specific BPA or CPA.

¹⁴⁶ DR 833-B Attachment 31, 32 and 33.

¹⁴⁷ DR 1 and 512-B Supplemental Attachment 1 - Overview

- A purchase or procurement selection when a supplier is specifically selected among others for explicit reasons other than price (e.g., replacement parts, compatibility, quality, service, support, etc.) is called “non-competitive.”
- A purchase or procurement where specific products or services are determined to be available from only one supplier is called “sole-source.”

31. Supply Chain has comprehensive purchasing policies and procedures. Nevertheless, there are a number of managerial oversight, procurement strategy and competitive procurement areas for improvement.

- All contracts are governed by Supply Chain Operating Procedures (SCOPs). Contract types over \$100,000 are sourced through the Oracle platform.
- Supply Chain provided 36 purchasing policies and procedures as shown in **Exhibit IV-28.**¹⁴⁸

**Exhibit IV-28
Purchasing Policies and Procedures**

SCOP 2 - Non-Competitive and Sole-Source Procurements SCOP 3 - Competitive Sourcing Decisions SCOP 5 - Bid Evaluations SCOP 6 - Request for Quotations SCOP 7 - Bid Negotiations SCOP 8 - Authorizing Purchase Orders and Contracts SCOP 9 - Terms and Conditions for Procurements SCOP 12 - Contract Management and Renewal SCOP 13 - Contract and Standard Purchase Order Modifications SCOP 14 - Punch Out Catalogs SCOP 15 - Procurement Files SCOP 16 - Supplier Qualification SCOP 17 - Supplier Diversity SCOP 18 - Contractor-Supplier Performance SCOP 19 - Material Survey SCOP 20 - Contractual Obligations Excluding Fuel SCOP 22 - Filing Contracts with the Public Service Commission SCOP 23 - PSC Contract Reporting and Filings of Statement of Procurement Policies and Procedures SCOP 24 - Disclosure Forms SCOP 25 - Confidentiality Agreements SCOP 26 - Control of Energy Control Center (ECC) and Alternate Energy Control Center (AECC) Drawings	SCOP 27 - Scrap Cable and Mixed Metals Payment Review Process SCOP 29 - Job Assignment Rotation SCOP 30 – Rebates SCOP 31 - Coop Contractor Access in Oracle CPS 100-2 - Contractor/Vendor Compliance Committee CPS 300-5 - Statement of Procurement Policies and Procedures CI-240-2 - The Action Line CI-320-11 - Corporate Procurement Card (P-Card) CI-320-14 - Acquisition of Materials, Supplies, or Services CI-320-15 - Business Travel CI-320-5 - Sale, Removal, and Disposal of Scrap, Surplus, Obsolete Material and Equipment, and Accommodation Sales: CI-330-15 - Materials Stocking Policy CI-450-1 - Distribution Cable Inventory Control System SR-4 Addendum - OR: P-Card Records Retention Procedure SR-5 - OR: Emergency Management Guide: Issuance, Control, and Use of Procurement Cards
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Source: DR 213-B

- These copious operating procedures provide instruction on how to conduct business yet fail to concentrate on competitive procurement – a primary procurement mission.

¹⁴⁸ DR 213-B Attachments 1 through 36. SCOP-1 (Category Management) is no longer used.

- Approvals for non-competitive purchasing decisions are too easily obtained and too often the norm. There is no requirement that authorizations for non-competitive or sole-source procurement be approved by a managerial level higher than the normal approval level in the delegation of authority.
 - Procurement Specialists review and determine the adequacy of non-competitive or sole-source procurement requests. Approval of Sole-Source and Non-Competitive justifications are solely the responsibility of the Procurement Specialist or Section Manager. The requestor/user department's justification is required to be included with the request.¹⁴⁹
 - While competitive procurement is encouraged by Supply Chain Operating Procedure SCOP-3, none of the purchasing contract/agreement types are necessarily the result of competitive procurement.¹⁵⁰
 - As part of a sourcing strategy, the Procurement Specialist may elect to establish multiple CPAs with established terms and conditions with the expectation that spot purchases would be bid among the population of CPAs for the duration of their contract(s). If the CPA was established through a competitive process, SPOs issued from such a CPA are considered to be competitive.
- Supply Chain relies on a variety of spend analyses, SCOPs and corporate policies to determine whether or not to modify contracts (BPAs, CPAs and SPOs).¹⁵¹ The Company's Delegation of Authority applies to contract modification approvals. Modifications can include:
 - Unit price adjustments
 - Increased contract funding
 - Contract terms extensions
 - Scope of work adjustments
 - Revised insurance requirements
 - Adjustments to freight terms.
- The Procurement Specialist responsible for a spend category or subcategory is responsible for ensuring that there is always available funding and time on the contracts and continuous availability for users.¹⁵² Contract extensions and funding increases do not require competitive renegotiation – thereby perpetuating any previous lack of competitive procurement.
 - Requests (except Purchase Order Change Requests/Authorizations executed by Construction) to extend a contract expiration date require approval by the VP of Supply Chain in Oracle, regardless of whether or not additional funding is required, with explanation, prior to execution of the extension (need, duration,

¹⁴⁹ DR 213-B Attachment 1 and Attachment 6

¹⁵⁰ DR 213-B Attachment 2

¹⁵¹ DR 213-B Attachment 1

¹⁵² DR 213-B Attachment 8

funding, terms and conditions and identification of initial award as competitive, non-competitive or sole source).¹⁵³

- Any change resulting in an increase to the authorized amount of the contract requires approval of the modification prior to execution. Approval must comply with corporate policy covering Delegation of Authorities.
- While Supply Chain recognizes that competitive bidding is critical to driving cost savings and mitigating various types of risk, the Oracle procurement system implemented in July 2012 did not include functionality that allowed procurement staff to indicate and report on the basis of a contract award. The need to have this information for sourcing and data analysis was not recognized and new functionality was not developed until late 2014. Procurement staff now have the ability to record the basis of contract award, including competitive, non-competitive and sole source.
- Current Key Risk Indicators (KRIs) for Supply Chain include processing time but do not directly address competitive procurement.¹⁵⁴
 - Three years ago Supply Chain created two KRIs aimed at mitigating risks associated with sole source and non-competitive relationships: “Rogue Employee” and “Loss of a Major or Sole Source Supplier”.¹⁵⁵
 - Neither of these KRIs directly promotes competitive procurement.
- BPAs are often used for multiple years, across for all CECONY and O&R operating groups and are designed to provide transaction efficiencies. BPAs support self-service and allow end users to browse and shop in the Oracle iProcurement module. Individual users shopping among these BPAs utilize their own selection criteria and are not obligated to select the lowest unit price if a BPA contract is available.
- Presently, Supply Chain does not have a formal policy or procedure that provides guidance on the establishment of construction service contracts by type (e.g., electric trenching or paving BPAs over multiple years) aligned to geographic categories (e.g., electric trenching in the Bronx or paving in Manhattan). The two primary factors used in the establishment of construction service contracts by geographic categories are the present corporate organizational structure and the perceived market’s ability to meet the needs within these geographic categories.¹⁵⁶
- Staggering contracts is a practice used when transitioning from one contractor to another so that all multi-year contracts for materials and/or services or geographic area do not start and end at the same time, as well as for other needs.¹⁵⁷ Presently,

¹⁵³ DR 213-B Attachment 9

¹⁵⁴ DR 867-B

¹⁵⁵ DR 512-B Supplemental Attachment 1

¹⁵⁶ DR 512-B Supplemental Attachment 1

¹⁵⁷ DR 512-B Supplemental Attachment 1

Supply Chain does not have a specific operating policy or procedure regarding staggering multi-year contracts.¹⁵⁸

32. Insufficient commitment to competitive procurement results in poor performance and ineffective cost programs and processes for both Companies.

- As stated earlier, the Oracle procurement system implemented in July 2012 did not allow reporting the basis of contract awards. This functionality, not developed until late 2014 provided the following data for 2015 (January through September data).¹⁵⁹
- Supply Chain reported that company-wide spend on sourced contracts is about \$1.8 billion annually, or \$1.5 billion January through September 2015.¹⁶⁰ A breakdown of spend by contract type in this period is shown in **Exhibit IV-29**.¹⁶¹

Exhibit IV-29
Spend Data by Procurement Type (from 1/1/2015 to 9/30/2015)

Procurement Type	Spend	Percent of Total
Rapid Response Spot Buys*	\$ 44,828,272	3%
Supply Chain Spot Buys (excluding Rapid Response)	333,379,200	25%
Supply Chain Agreements (BPAs/CPAs)	969,600,305	72%
Total	\$1,347,807,778	100%

*Note: Rapid Response handles Spot Buys under \$100,000 only.

Source: DR 512-B Supplemental Attachment 1

- The spend data in **Exhibit IV-29** is inconsistent with other data reported by Supply Chain, shown in **Exhibits IV-30** and **IV-31** below. Specifically, Supply Chain data reported in **Exhibit IV-29** notes \$1.3 billion spend for January through September 2015, but the competitive performance data shown in **Exhibits IV-30** and **IV-31** only show \$322 million for the first three quarters of 2015 (**Exhibits IV-30** plus **IV-31**).¹⁶²
- Based on 2015 award data, only 29.8 percent of contracts for purchase of construction, professional and operational services representing 67.9 percent of released dollars were competitively procured in 2015 as shown in **Exhibit IV-30**.¹⁶³

¹⁵⁸ DR 516-B

¹⁵⁹ DR 512

¹⁶⁰ DR 512-B Supplemental Attachment 1, Table 1 – Company Spend Profile

¹⁶¹ DR 512-B Supplemental Attachment 1 – Company Spend Profile

¹⁶² Supply Chain uses a number of terms such as “spend,” “released” and “approved” dollars to report purchasing activity and does not reconcile differences in reported data.

¹⁶³ DR 519-B Confidential Response

Exhibit IV-30
Construction, Professional and Operational Services Contract Award Data
(Approvals from 1/2/2015 to 9/30/2015)

Services Contracting	Count	Percent of Contracts	Released Dollars 2015 Year to Date	Percent of Released Dollars
Competitive	898	29.8%	\$156,760,068	67.9%
Non-Competitive	1,918	63.7%	55,992,246	24.3%
Sole Source	197	6.5%	18,190,799	7.9%
Total	3,013	100.0%	\$230,943,114	100.0%

Source: DR 512-B Supplemental Attachment 1 and DR 862-B.

- Similarly, only 13.0 percent of material contract awards representing 46.9 percent of released dollars were competitively procured in 2015 as shown in **Exhibit IV-31**.¹⁶⁴ “Material” was defined as contracts for the purchase of inventory stock, non-stock material items, equipment, and incidental services associated with the installation of equipment.

Exhibit IV-31
Materials Contract Award Data
(Approvals from 1/2/2015 to 9/30/2015)

Materials Contracting	Count	Percent of Contracts	Released Dollars 2015 Year to Date	Percent of Released Dollars
Competitive	464	13.0%	\$42,864,073	46.9%
Non-Competitive	2,939	82.5%	30,030,561	32.9%
Sole Source	158	4.4%	18,509,858	20.3%
Total	3,561	100.0%	\$91,404,492	100%

Source: DR 512-B Supplemental Attachment 1 and DR 862-B

- Following audit discussions and NorthStar feedback during the audit regarding the levels of competitive procurement, Supply Chain provided additional information regarding the basis of BPA/CPA services contract awards for the period July 2012 through November 2015, as shown in **Exhibit IV-32**.¹⁶⁵ In the July 2012 through November 2015 period, 51.6 percent of BPA/CPA service contracts were competitively bid.

¹⁶⁴ DR 520-B Confidential Response

¹⁶⁵ DR 512-B Supplemental Attachment 1 and DR 862-B, Table 3.3

Exhibit IV-32
Construction, Professional and Operational Services Contract Award Data
(BPA/CPA Approvals from 6/30/2012 to 12/2/2015)

Services Procurement	Count	Percent of Total Contracts	Approved Dollars	Percent of Total Approved Dollars
Competitive	710	51.6%	\$3,168,840,201	88.1%
Non-Competitive	508	36.9%	310,452,493	8.6%
Sole Source	150	10.9%	108,108,038	3.0%
Blank	8	0.6%	9,380,111	0.3%
Total	1376	100.0%	\$3,596,780,843	100.0%

Source: DR 862-B, Attachment 1, Table 3.3

- Supply Chain also provided additional information regarding the basis of a sample of all active material BPA/CPA contract awards for materials as shown in **Exhibit IV-33**.¹⁶⁶ In the July 2012 through November 2015 period, 60.4 percent of BPA/CPA materials contracts were competitively bid.

Exhibit IV-33
Materials Contract Award Data
(BPA/CPA Approvals from 6/30/2012 to 12/2/2015)

Materials Procurement	Count	Percent of Total Contracts	Approved Dollars	Percent of Total Approved Dollars
Competitive	373	60.4%	\$1,237,588,072	60.4%
Non-Competitive	147	23.8%	437,004,021	21.3%
Sole Source	95	15.4%	374,083,236	18.3%
Blank	3	0.5%	1,543,258	0.1%
Total	618	100.0%	\$2,050,218,587	100.0%

Source: DR 512-B Supplemental Attachment 1 and DR 862-B, Table 4.3.

- Levels of competitive procurement are unsatisfactory for materials and services as shown above.
- Another record of poor competitive performance is shown on the monthly Procurement Specialist Dashboard report shown in **Exhibit IV-34**.¹⁶⁷ Spot Buy contracts representing by far the largest contract/agreement type of procurement activity and 28 to 35 percent of procurement dollars are the worst performing group.

¹⁶⁶ DR 862-B, Attachment 1, Table 4.3

¹⁶⁷ DR 867-B Attachment 1

Exhibit IV-34
Procurement Decisions as of January 1, 2015

Procurement Decision	BPA's	CPA's	SPO's
Competitive	348	23	1,377
Non-Competitive	272	3	5,944
Sole Source	100	5	375
Null	7	0	4,973

Source: DR 867-B Attachment 1.

- Supply Chain reported data shows that competitive services procurement fell from a combined dollar level of 86 percent to 62 percent in 2015.¹⁶⁸

D. RECOMMENDATIONS

1. Develop comprehensive and integrated electric distribution system plans for CECONY and for O&R that utilize a consistent approach to asset management, regulatory programs (including Reforming the Energy Vision (REV)) and system growth. The initial structure and content of the plans should be included in the Distributed System Implementation Plans (DSIPs) to be submitted to the Commission mid-2016. The plans should include:
 - A long-term view of the entire electric distribution system that identifies the necessary design, operation and infrastructure required to meet acceptable reliability standards at each voltage level and support the integration of distributive energy resources.
 - A concise statement of infrastructure needs required for the planning horizon. Planning horizon must be at least ten years and address the integration and control of a competitive distribution energy market.
 - Ability to analyze system options against other alternatives to develop cost-benefit analyses.
 - A total cost for upgrading and repairing the system.
 - A stated level of expected reliability for all voltage classes.
 - Understanding the operational challenges due to the addition of distribution energy resources.
 - Development of overall public and regulatory policy concerning the retail distributive energy market.
 - Future sensitivity analysis of cost versus reliability
 - Expected level of reliability to be obtained by implementing distribution programs.

¹⁶⁸ Based on combined dollars of BPAs, CPAs and Spot Buys, DR 862-B Tables 3.3 and 3.4 versus 2015 data shown in Exhibits IV-30 and IV-31.

- Anticipation and remediation of short-term system problems.
2. Develop and implement the capital program optimization model across both companies and organizational units in a consistent manner.
 - Clarify the role and responsibilities of the “project sponsor” – as the individual and organizational unit requesting and justifying the capital project until its completion.
 - Strictly enforce the policy that all capital projects including those within capital programs must have completed white papers and individual funding appropriation approvals.
 - Prohibit grouping of multiple capital projects (e.g., within programs or of similar characteristics) that undermines the strategic value analysis.
 - Improve the alignment of the somewhat idealistic strategic drivers with actual capital project characteristics.
 - Integrate the capital program optimization model results with system improvement execution plans (as described in recommendations #1 and #2 above) recognizing schedule and resource limitations.
 3. Develop a CECONY comprehensive secondary electric network asset management plan. An asset management plan in its most simple terms is a business approach intended to align the financial management of assets to corporate goals. Performance goals should change into the future, representing improvements in overall asset condition. Integral to this plan are the following:
 - Establishment of performance goals. Goals must be tangible and serve as a realistic indicator of overall system condition and financial performance. Typical goals could include:
 - Meeting Frequency and Network Outage Durations
 - Limiting equipment failures to a certain number annually
 - Extending equipment life expectancy through enhanced O&M activities
 - Completing all planned work within budget
 - Analysis of risk to determine most critical system issues.
 - Data collection – CECONY should develop a database of the components to the asset
 - System assessment – an assessment of asset components including age, maintenance records and industry trends
 - Determination of risk – Based on the system assessment identify highest risk in maintaining operations and reliability
 - Development of strategies to mitigate risk. CECONY must develop tactical strategies for both asset replacement and operating and maintenance practices that address:
 - Aging infrastructure – the CECONY asset is aging faster than equipment can be replaced

- Limited growth – revenue and rate of return is limited to the existing rate base
 - Limited resources – a limit on how much capital can be directed toward this business unit and how much rates can be increased.
- Implementation Plan – long-term plan with annual projects and programs and expected results.
 - Evaluation of Progress – comparison of past year’s performance against goals. It is important to recognize that performance is indeed a vision and should be tracked over time and evaluated for achievability.
 - Collaboration- limited growth and aging infrastructure is a challenge in many areas of the North East. Establishing a working group with other utilities with similar challenges may provide opportunities to advance this issue.
4. Reevaluate the projected costs and timeline of the Accelerated Main Replacement program for consistency with project objectives.
 - Reconcile previously developed resource, budget projections and main replacement work volumes.
 - Refine tactical plans and requirements.
 - Correct any potential for overly optimistic expectations.
 5. Improve competitive procurement levels to reacquire and exceed previous levels of performance.
 - Edit and modify procurement policies and procedures to establish a stronger competitive bias.
 - Increase approval levels for any non-competitive transactions.
 - Competitively re-bid contracts or formally re-confirm competitive basis instead of providing funding extensions and renewals.
 - Perform a verifiable benchmarking study of large utility purchasing functions to establish best in class performance levels. Use this information to establish stretch targets for future competitive performance goals.
 - Adopt competitive procurement KPIs to balance the current transaction processing time KPIs.
 - Develop an improved competitive approach to contractors, their geographic coverage and staggered strategy for multi-year procurement contracts.

- Remove end-users from participation in the selection of multiple service providers for similar services or provide specific guidelines to be followed and report these results to senior management.
- Revise purchasing analytical processes to improve performance reporting clarity and consistency reduce variations in terminology and provide greater corporate attention to competition.
- Formally commit to a timetable for reacquiring competitive procurement levels previously demonstrated. Report improvement progress to the DPS on a quarterly frequency until these levels are reached.

V. CAPITAL AND O&M BUDGETING

This chapter provides the results of NorthStar's review of the capital and operations & maintenance (O&M) budgeting processes of CECONY and O&R with the respective Board's involvement in the process.

A. BACKGROUND

Capital and O&M budgeting are typically separate, but closely related processes. Capital budgets are often driven from the top down by broad organizational needs such as customer and load growth, regulatory requirements, and restrictions related to the capability of the utility to fund needed capital projects. O&M budgets are more often developed from the bottom up with recognition of the immediate physical needs of the system as well as long-term maintenance priorities.

Budgets are also important links to other areas of the company. Budgets must reflect the broader and longer-term strategic plans that establish direction for the company. Budgets can be effective tools in helping the company achieve its desired return on equity by identifying the portfolio of projects which achieve the desired rate of return. If budgets are timely and sufficiently detailed, they provide a roadmap for management to establish work priorities. They also provide dynamic feedback that informs managers when their activities have deviated from the plan and may result in not achieving the desired results.

The capital and O&M budgeting process at CECONY and at O&R are closely integrated. The budget and planning processes begin with long range business planning. Based upon the direction and strategies established in the plan, a five-year work plan and financial forecast is prepared. The five-year plan includes the projects and programs that will be undertaken during this period along with identification of all other costs likely to be incurred and sources of revenue. The annual budget represents the cost for the approved work plan for any particular year.

The annual budget process begins in March or April with a Financial Planning Day followed by distribution of a Business Planning Memo containing financial planning guidelines for both capital and O&M to be used by each utility and a timetable for the budget preparation process. Each unit responsible for preparing a budget uses the guidelines and its functional needs to prepare draft budgets which are reviewed by successively higher levels of management. Preliminary capital and O&M budgets are presented separately to the respective Boards of O&R and CECONY in October. The CECONY (concurrent with CEI) and O&R Boards give their final approval of the capital and O&M budgets for their respective companies at their November meetings. The CEI Board approves the O&R budget at its November meeting after the O&R Board approval.¹ Throughout the process, assumptions affecting capital and O&M are coordinated. O&M associated with new projects is separately identified as Maintenance Associated with Capital (MAC). This allows

¹ DR 26

accurate changes to budgeted O&M if a project is not approved.² The overall schedule of activities for budget development is shown in **Exhibit V-1**.

CECONY and O&R use Oracle E-Business Suite (EBS) as their primary accounting system. Oracle EBS is a web-based Enterprise Resource Management system with a suite of integrated Finance and Supply Chain modules. Oracle EBS performs general ledger, project costing, and accounts payable and accounts receivable functions and interfaces with payroll, work management, treasury and asset management systems. In addition to Oracle EBS, the utilities use Hyperion Planning for budget preparation, Oracle Financial Management for consolidation and reporting, Oracle Business Intelligence for reporting and analytics and PowerPlant for asset management.³ As shown in **Exhibit V-1** the budget information is entered to Hyperion to report on budget amounts.

Exhibit V-1 Annual Budget Schedule

Activity	Timetable
Guidelines issued for annual business plan and five-year forecast	April
Hyperion planning open for 2016-2020 data entry	May
Revised overheads posted to Hyperion planning	June
Capital budgets entered into Hyperion	Jun-Aug
O&M budgets entered into Hyperion	Jun-July
Resource adequacy review with Vice President (VP) of Business Finance	June
Department meetings with O&R President to review preliminary annual budget and five-year plan	June
Sales volume for O&R and CECONY entered into Hyperion	July
Revenue projections for O&R and CECONY entered into Hyperion	July
Meetings with CECONY Senior VPs to review preliminary annual budget and five-year plan	July
Meetings with CECONY President to review preliminary annual budget and five-year plan	August
Meetings with Chief Executive Officer (CEO) (first round): Finance Competitive Energy Businesses O&R Law Business Shared Services Shared Services Corp. O&M, incl. Employee Benefits & Health Gas Operations Environmental Health & Safety Central Operations Public Affairs Electric Operations Customer Operations	August
Meetings with CEO and Chief Financial Officer (CFO) (second round if needed)	September
October Board Meeting – Five-Year Business Plan Presentation Preliminary earnings review with CEO Review with Presidents, Senior VPs and Cost Management CEI Board Meeting O&R Board Meeting	September September October October
November Board Budget Presentation O&R Board Meeting – O&M and Capital Budget CEI Board Meeting – O&M and Capital Budget	November

Source: DR 26-C, Attachment 1 Confidential Response

² DR 161

³ DR 40-B

For each proposed capital project or program the project sponsor develops a detailed business case called a White Paper (throughout this chapter, “project” includes both projects and programs). These white papers employ a standardized structure so that assumptions can be compared on an “apples-to-apples” basis. See Chapter IV – System Planning for a comprehensive description of the role of white papers in selecting projects for approval. Projects are categorized as Regulatory Mandated, Operationally Required, or Strategic.⁴ The Regulatory Mandated, Operationally Required, and In-flight projects take precedence and are generally included in the list of approved projects. Strategic projects are included based on the optimization process.⁵

The optimization process uses a software package named PI360 for Project Intelligence. Each project is rated according to nine strategic drivers. While these strategic drivers may change from time to time to reflect corporate direction, in 2015 the following drivers were used:

- Improve public and employee safety
- Improve customer experience
- Reduce and manage risk
- Provide reliable service
- Reduce cost to customers
- Strengthen and develop employees
- Sustain environmental excellence
- Strengthen company processes
- Enhance external relationships

Projects are divided into portfolios related to specific organizational units. The strategic driver values for each project are entered into PI360. The software rates all the projects in the portfolio and provides a ranked list of the most desirable projects to enable the company to meet its strategic goals.⁶

Preliminary results are reviewed by one of several Optimization Teams. The Optimization Teams generally comprise business unit leaders and subject matter experts from the respective capital expending operating, shared service, customer service and/or engineering organizations. If the Optimization Team or the project sponsor question the validity of the results, the project is discussed and changes to its strategic drivers may be made. After all projects are reviewed, the portfolio is optimized again using the PI360. This process may be repeated several times until the Optimization Team is satisfied that the portfolio of projects that has been selected provides the best alignment to the corporate strategy. The final results are reviewed with the Capital Governance Committee, a multi-functional team of senior managers. While bias can never be completely avoided, the broad composition and senior level of members of the Optimization Team and Capital Governance Committees reduces any tendency for bias. Strategic projects that are selected in the

⁴ In-Flight projects were approved in a prior budget and are in process at the beginning of the budget period.

⁵ DR 280

⁶ See Chapter IV – System Planning for a comprehensive discussion of the project selection process.

portfolio are approved for initiation in the budget year along with Regulatory Mandated, Operationally Required, and In-flight projects.⁷

Throughout the year, the Governance Committees meet several times to determine if projects in the portfolio are on target to spend the approved budget. If a project is not likely to spend the approved budget during the current year, some of its budget may be assigned to a project that is spending at a faster rate but still expects to complete within budget. The project that loses budget in the current year can be reapproved in the following year. Projects that are estimated to be over budget must meet corporate procedures for approval of additions to budget.

The O&M Budget, as noted in **Exhibit V-1**, follows the same calendar as the Capital Budget. O&M Budgets are prepared by individual operating units. Each unit forecasts its work volume by determining the requirements to meet the major objectives of the unit. For example, Customer Operations would include: reading meters, sending out bills, and collecting money from customers. Each unit uses a reasonable expectancy as a measure of the amount of time needed to accomplish a particular activity. Each organization factors in efficiency improvements to reflect how new or enhanced technology and work process improvements will improve the reasonable expectancy measures.⁸

Each operating unit also takes into account the amount of productive hours it has available considering the number of staff and the lost time due to training, sick etc. If the available productive hours do not match the amount of work to meet its objectives, the unit may have to request additional staff or reduce its work commitment.

Once the work has been identified, the organization uses one of three basic approaches to determine its projected O&M costs. The three approaches are: Basic Labor, Cost Allocations and Labor Rate. Basic Labor Organizations directly assign costs to specific accounts. For example, Customer Operations, Finance and other Administrative units are labor driven and all their O&M impacts the Income Statement. Allocation organizations are those where costs are not directly assignable. They use clearing accounts to capture both direct and indirect costs of the organization. For example, Engineering Groups can develop layouts for both O&M and Capital projects. They use a time study to determine the percentage of time devoted to O&M and to Capital. The percentage is used to allocate the costs accordingly. Labor Rate organizations capture gross costs in clearing accounts and distribute the costs to end-user accounts. This is accomplished by applying the direct labor rates plus associated indirect costs to the hours incurred and the resulting costs are charged to the appropriate end-user accounts.

Once each unit has entered its hours into Hyperion, the hours per unit and unit projections are entered at the activity level. Hyperion calculates the hours used to distribute the costs to all of the appropriate organizations. The results reflect the projected O&M amount.

⁷ More information on project selection and use of the optimization process is presented in Chapter IV – System Planning.

⁸ DR 161-C Attachment 1

B. EVALUATIVE CRITERIA

The evaluative criteria were taken from the final work plan and include both the Staff's evaluative criteria from the Work Plan and those added by NorthStar.

- Do the Board, executive and senior management exercise a suitable level of authority and responsibility over the budgeting process? (From Chapter III – Corporate Governance)
 - Are the Boards, executive and senior management properly involved in the development of budgeting guidelines and periodic budget reviews and approvals?
 - Is the role of the O&R Board in the development of budgeting guidelines and periodic budget reviews and approvals appropriate?
 - Are the roles of the Board of Directors/Trustees and the executive and senior management in developing the budget appropriate?
 - Do the guidelines, periodic budget review process and approval process support the roles of the Boards and senior managers?
- Does CEI corporate affect budgeting priorities and allocations within CECONY and O&R in a positive manner? (From Chapter III – Corporate Governance and Chapter IV – System Planning)

The remaining evaluative criteria were taken from Chapter IV – System Planning.

- Are the roles and responsibilities of the Boards, and executive and senior management in the capital and O&M budgeting process appropriate and are they executed effectively?
- What is the level of Board member participation in the budget process and utilizing what levels of expertise?
- Does the Board see and have access to a sufficient level of short and long-term budget detail relative to its budgetary responsibilities?
- Is the construction/capital and O&M/maintenance priority setting process balanced, consistent and appropriately executed from the top down?
- Are relationships among planned/budgeted expenditures, rate case proposed expenditures, performance-based mechanisms and actual expenditures appropriate?
- Is the capital budgeting process documented, adhered to, appropriate and effective?
 - Project authorization
 - Project appropriation
 - Increases/decreases to authorization and appropriation amounts
 - Capital budget status reporting
 - Validation in advance of appropriation
 - Funding controls and other elements of the process.

- Does O&R use budgeting guidelines, practices and procedures, including “zero-based” and other alternative methods, effectively?
- Are bottom-up and top-down processes for developing budgets for capital/construction classifications and categories appropriate?
- Are the rationale and criteria used to make budget decisions consistent across CEI companies and departments?

C. FINDINGS AND CONCLUSIONS

1. The roles and responsibilities of the Boards, and executive and senior management of both CECONY and O&R in the capital and O&M budgeting process are appropriate and are executed effectively.

- Executive and senior management are closely involved in the development of budgeting guidelines. The Financial Planning Day at which guidelines and assumptions for the next year’s budget are developed includes participation by all senior managers of CECONY and O&R and is led by the Chief Financial Officer (CFO). Following the Financial Planning Day, the CFO issues a Business Planning Memorandum that contains the assumptions and schedule to be used in preparing both capital and O&M budgets separately for CECONY and O&R.
- Governance Committees, made up of senior managers and officers, provide the initial approval of the capital budgets. During the budget year, these Governing Committees periodically review actual expenditures and recommend shifts in budgets as appropriate.
- Budgets and guidelines are developed by officers and senior managers of each company and presented to their respective Boards to keep them informed during the process. The Board focuses primarily on reviewing and approving final budgets as is common practice in the industry.
- The budget guidelines, approval process and periodic budget review process effectively involve senior management and officers and support their roles in preparing and controlling budgets and expenditures.
- As required by the Board’s Delegation of Authorities, the Finance Committee reviews all capital projects with an aggregate cost of over \$50 million, and the full Board reviews capital projects with an aggregate cost of over \$100 million. The full Board approves the resulting budgets and all projects in excess of \$50 million.⁹ NorthStar could not determine the specific guidelines used by O&R.
- The Finance Committee reviews significant budget variances on its Dashboard at each meeting to determine how well CECONY is performing against budget. If a

⁹ DR 161-C Attachment 1

project is over budget, management is required to provide an explanation and a remedial action plan.

2. The participation of the Boards of both utilities in the budget process focuses on approving the capital and O&M budgets prepared by staff and approved by successive layers of management. This practice is appropriate because it allows the Board to focus on the major issues and not become involved in the minutiae of managing the companies' operations.

- The Finance Committee of the CECONY Board reviews the budgets and recommends them for approval to the entire Board. Because the O&R Board is smaller, the Board as a whole reviews the budgets and approves them as appropriate.
- The Finance Committee of the CECONY Board recommends projects in excess of \$50 million for approval of the entire Board.¹⁰
- Members of the CECONY and CEI Finance Committee have extensive experience in finance:
 - One member was CEO of a major utility with responsibility for operations, finance and strategic planning.
 - One member is currently the Senior Managing Director of a private equity investment firm with experience as an investment banker specializing in the power sector.
 - Another member was CFO of a major US Service corporation with prior banking experience.¹¹

3. The Board reviews capital and O&M budget material with sufficient detail to understand the companies' priorities.

- Detailed budget materials presented to the Board focus on the upcoming budget year. Summary information for the next five years is also provided.¹²
- At each meeting of the Finance Committee of the Board, Directors review a Dashboard report that presents the status of individual projects that the Board approved and the status of individual Capital and O&M Budget line items.¹³
- For the 2016 capital budget presentation to the CEI/CECONY Board, projects in excess of \$100 million, which require Board approval, were presented individually.¹⁴
- Following these Board approved projects, the capital budget is broken down into:
 - Electric

¹⁰ DR 567

¹¹ DR 30

¹² DR 889, 890

¹³ DR 161-C Attachment 1

¹⁴ DR 678 Confidential Response

- Gas
 - Steam
 - Common
- Each of the major categories above is further broken down, with projects in excess of \$10 million listed individually. Projects under \$10 million are grouped in a single line. For example, Electric includes:
 - Replacement
 - Risk Reduction (safety and reliability)
 - New Business
 - System Expansion
 - Municipal Infrastructure Support
 - Information Technology
 - Security
 - Equipment Purchases
 - Environmental
 - Other
 - The other major categories (Gas, Steam, and Common) are broken into similar levels of detail.

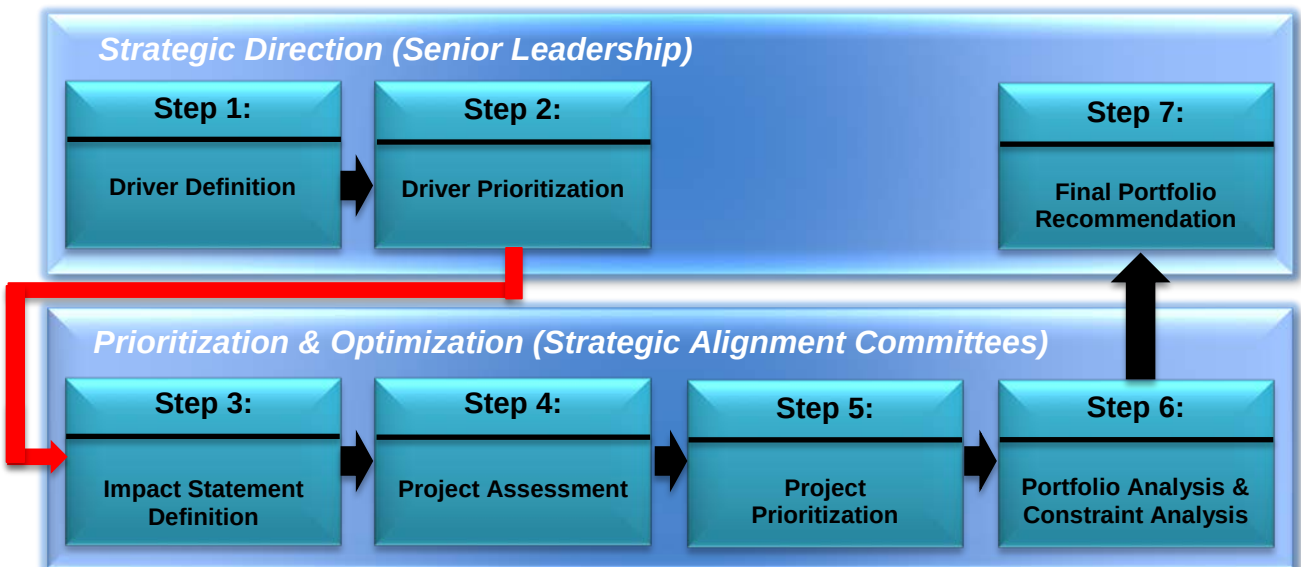
4. The capital and O&M priority setting process is balanced and appropriately executed from the top down and validated from the bottom up.

- The process is initiated from the top down with the discussions that occur at the Financial Planning Day and the guidelines that are provided in the Business Planning Memo.¹⁵
- Validation of the capital budget occurs through the bottom up use of the PI360 portfolio optimization process which provides a highly structured process for comparing proposed projects using a common set of criteria. Projects are also reviewed by Governance Committees of officers and senior managers to insure consistency.
- The O&M Budget follows top down guidance as noted above but is largely constructed from the bottom up which is the most appropriate approach. Each organizational unit determines the work volume needed to meet its major objectives. Adjustments to O&M are made based on the total amount of work the unit can complete based on anticipated improvements in performance and available productive hour. These estimates are reviewed and must be approved by successive layers of management.

¹⁵ DR 26-C Attachment 1 Confidential

- Capital project prioritization, the optimization process and project selection is discussed in greater detail in Chapter IV – System Planning. The process is illustrated in **Exhibit V-2** below.

Exhibit V-2
Priority Process and Governance Overview



Source DR 161-C Attachment 1

5. The companies have an excellent process for determining that planned and actual expenditures are appropriate given budgeting procedures and rate case proposals.

- A Finance Planning Day is held in late March or early April for both CECONY and O&R to begin the annual budget development process and discuss operating and financial performance, preparation for challenges, recognize opportunities and develop the business planning process and financial budget for the upcoming year.¹⁶
- For CY 2016, the CECONY financial planning guidelines distributed in April reflect the cost of capital projects and programs that are consistent with the one-year extension for Electric service and the third year of the current Gas and Steam rate plans. For 2017, 2018 and 2019, the financial planning guidelines reflect the estimated cost of projects and programs expected to be included in rate case proposals filed in January 2016 and included in the Long Range Plan for periods not yet covered by the rate case proposals.¹⁷ Preliminary financial planning guidelines provided for budget development included:
 - Guidelines for departmental O&M expenses (2016-2020). These guidelines show anticipated increases in operations and shared services, overall inflation rates and a one percent productivity reduction.

¹⁶ DR 26

¹⁷ DR 26-C Attachment 1 Confidential Response

- Guidelines for clearing expenditures reflect expected fuel costs, inflation rates and an expected one percent productivity reduction.
 - Guidelines for capital expenditures, consistent with rate plans and business plans along with funding for major projects currently underway.
- O&R budgeting guidelines for CYs 2016, 2017 and 2018 reflect the capital and O&M costs included in the pending (as of April 2015) New York electric and gas filings. For 2019 and 2020, the business plan and corresponding budgets should reflect estimated expenses based on inflation, less one percent productivity and identified program changes.¹⁸
 - The project approval process insures that Regulatory Mandated projects are approved before any discretionary projects are approved.¹⁹
 - The Governance Committees that oversee the project selection process meet several times during the year to review progress and expenditures and ensure they are appropriate and as effective as possible.
- 6. The capital budgeting process used by both companies is consistent, clearly documented, effectively communicated to involved staff and enforced through the Governance Committee structure. The process is both appropriate and effective.**
- In 2010, CECONY established an organizational structure to define and implement a Capital Project & Program process and governance structure.²⁰
 - The implementation has been progressive beginning with administrative projects for CECONY and ending with complete conversion for O&R for the year 2016.
 - The Enterprise Project Management Office in Business Improvement Services selected and adopted the PI360 process and software. Then, they developed a system of standardized project proposal documentation and procedures for project approval, including the creation of the Governance Committees.
 - The standardized approach insures that projects selected will be in alignment with corporate strategic vision and is designed to avoid common pitfalls that often occur in less structured environments such as:
 - Projects are chosen based upon who submits them and how fancy the “slide ware” is vs. the financial merit and strategic value.
 - Small business units often lose.
 - Challenges associated with comparing financial value from one project to the next because of inconsistent documentation.
 - Cost over-runs or under-runs are not recognized early enough by an appropriate group to reallocate funds.

¹⁸ DR 26-C Attachment 1 Confidential Response

¹⁹ DR 280

²⁰ DR 280

- The capital budgeting process follows CI 610-1 and the Delegation of Authority and addresses common concerns including:
 - Project authorization requires approval of the Governance Committees.
 - Project appropriation can only be performed by Board approval of the budget.
 - Increases/decreases to authorization and appropriation amounts are overseen by the Governance Committees.
 - Capital budget status reporting is included with materials supplied several times a year to the Governance Committees.
 - Validation in advance of appropriation is insured by the proposal documentation requirements and review by the Governance Committees.
 - Funding controls which include in-flight financial oversight to keep the expenditures within the approved appropriation limits.
- The “Corporate Instruction” document provides the guidelines for the management of the capital budget process and specifies the procedures for authorization, appropriation of funds, and funding control for capital projects and programs in accordance with Corporate Policy Statement 000-1 - Delegation of Authorities. The major components of the capital budget process are the capital optimization process, the authorization/appropriation process, and funding controls.²¹
 - The Capital Optimization Process aligns and ranks all capital project and program requests with the corporate strategic drivers, risks, and benefits. Proposed capital projects or programs are grouped under one of three categories: (1) Regulatory Mandated, (2) Operationally Required, and (3) Strategic. CECONY and O&R have developed a strategic alignment methodology to evaluate projects and programs to ensure that funds are efficiently allocated to reduce operating risks and meet strategic objectives. This methodology takes into account the portfolio’s cost, benefits, and weighted strategic value allowing for analysis of all projects and programs as an integrated portfolio. Business Improvement Services runs the optimization analysis and provides the strategic value and ranking of the projects and programs within the portfolio to the Optimization Teams. The Optimization Teams use this analysis to select the projects and programs for the next budget cycle to ensure alignment with their 5-year plans. This is the first step of the capital budgeting process.
 - Authorization, the second step, represents the formal budget approval, which establishes the scope, location, schedule, and capital/retirement cost for a project. Authorization does not constitute permission to purchase equipment or begin construction.
 - Appropriation, the third step of the capital program/project approval process, represents a formal grant of authority to obligate a specific amount of funds.
- The program or project manager assigned is responsible for maintaining records of contract obligations and total project obligations. In the case of Construction, these records are handled in accordance with Operating Procedure 280-1, the Contract

²¹ DR 221-O Attachment 3

Administration Manual.²² The project or program manager also maintains a formal Current Working Estimate (CWE) for the project. If at any point the CWE exceeds the approved appropriation and/or authorization, the project or program manager, along with the original requestor, with the assistance of the necessary personnel (e.g., Construction, Engineering), will prepare and forward an Authorization/ Appropriation Template to request an increase in the appropriation and/or authorization. Requests for increases or decreases of authorization/appropriation must be approved in accordance with Corporate Policy Statement 000-1, Delegation of Authorities.

7. **O&R and CECONY use the same fundamental policies, procedures and timeline for capital and O&M budgeting. Capital program and project budgeting is inherently “zero based.” O&M budgeting begins with a “zero based” process but is heavily influenced by the previous years’ experience.**
 - The overall schedule of activities for CECONY and O&R budget development is shown in **Exhibit V-1**.²³
 - Annual capital program/projects and O&M budgets along with the five-year business plans are reviewed by executive management, the Boards and are developed along the same timeline.
 - Capital programs and projects are estimated, prioritized and approved on an individual basis as described previously. Therefore, they are “zero based”.
 - O&M budgets begin with each organizational unit estimating the work necessary to meet its work volume by determining the requirements to meet the major objectives of the unit. From this point, the O&M Budget is compared directly to previous budgets with all deviations requiring explanation.
8. **There are no CEI corporate staff to affect budgeting priorities. The CEI Board is the same as the CECONY Board and NorthStar found the Board’s effect on allocations within CECONY and O&R to be positive and focused primarily on larger projects.**
9. **Budgeting priorities and allocations among organizational units are established with the CFO’s and the officers and senior managers of CECONY and O&R during their Financial Planning Day discussions which launch each year’s budget preparation cycle.²⁴ The rationale and criteria used to make decisions are consistent across all units of CECONY and O&R, including shared services. The CEBs were outside the scope of NorthStar’s audit.**

²² DR 221-O Attachment 1 and DR 168-C Attachment 9

²³ DR 26

²⁴ DR 26

D. RECOMMENDATIONS

There are no recommendations in this chapter.

VI. PROGRAM AND PROJECT PLANNING AND MANAGEMENT

This chapter addresses CECONY and O&R's management of programs and projects, including schedule and estimate development, contractor oversight, and project controls.

A. BACKGROUND

CECONY and O&R's capital work involves programs and projects. In general, a program is an on-going effort composed of multiple projects; while a project has a defined scope of work with a beginning and an end date. As explained in CECONY's Capital Budget Process procedure, projects are defined as any undertaking that has a defined scope, schedule, and work plan (with implementation details); is properly authorized, appropriated, and funded; may be multi-discipline in scope; and is subject to performance evaluation. A program may consist of one or more projects that are funded under the program.

- Program – Multiple locations and/or yearly groups of similar projects in specific categories (e.g., leak repair, pole replacement, batteries, meter installations, failed equipment) or defined types of work (e.g., technology upgrade, end-of-life, and regulatory standards such as environmental or safety) that have trends of continuing expenditures.
- Project – A scope of work defined by specific goals. The goals for some projects are determined by planning forecasts related to customer use or forecasted need. Other projects result from mandated regulatory commitments such as commodity transmission and distribution voltages, ranges, and pressures; or operations and user department requests to investigate and address concerns, issues, or identified deficiencies.¹

As explained in Chapter V – Capital and O&M Budgeting, program and project funding is authorized during the annual capital budget process; the authorized funds are then appropriated to specific projects as necessary. This chapter addresses the project management from the appropriation of funds to the completion of the project.

CECONY Program and Project Management

Three major CECONY operating divisions are involved in the execution of its capital program: Electric Operations, Gas Operations, and Central Operations. All three organizations are led by Senior Vice Presidents (SVPs) who report directly to the CECONY President.

- Central Operations is responsible for substation, electric transmission, and steam operations, as well as engineering support for these functions. Central Operations

¹ DR 507-C Attachment 2

also provides construction services and management for all organizations, including Electric and Gas Operations.

- Electric Operations is responsible for engineering, operations, maintenance and construction of CECONY's electrical distribution system.
- Gas Operations is responsible for engineering, operations, maintenance and construction of CECONY's gas transmission and distribution system.

A breakdown of CECONY capital expenditures from 2012 to 2014 is shown in **Exhibit VI-1**. Central Operations' substation, system and transmission, and electric interference costs are typically included in the "Electric" capital budget area. Electric Operations has the greatest amount of capital expenditures.

Exhibit VI-1
CECONY Capital Expenditures by Responsible Organization
(\$ in Thousands)

	2012	2013	2014
Central Operations			
System and Transmission	\$ 59,073	\$ 60,081	\$ 34,265
Substations	141,090	198,293	232,294
Steam Distribution	30,750	23,121	34,404
Steam Plant (Electric Production)	32,359	31,057	24,165
Steam Plant (Steam Production)	63,717	88,019	35,770
Electric Interference	77,292 [Note 1]	78,612	76,750
Total Central Operations	\$ 404,281	\$ 479,183	\$ 437,648
Electric Operations			
Electric Operations	876,074	890,169	806,109
Gas Operations			
Gas Operations	386,063	497,760	507,969
Total	\$ 1,666,418	\$ 1,867,112	\$ 1,751,726

Note 1: Includes Water Tunnel & Stimulus Projects

Source: DR 394-C Attachments 1 through 9 and Fact Verification.

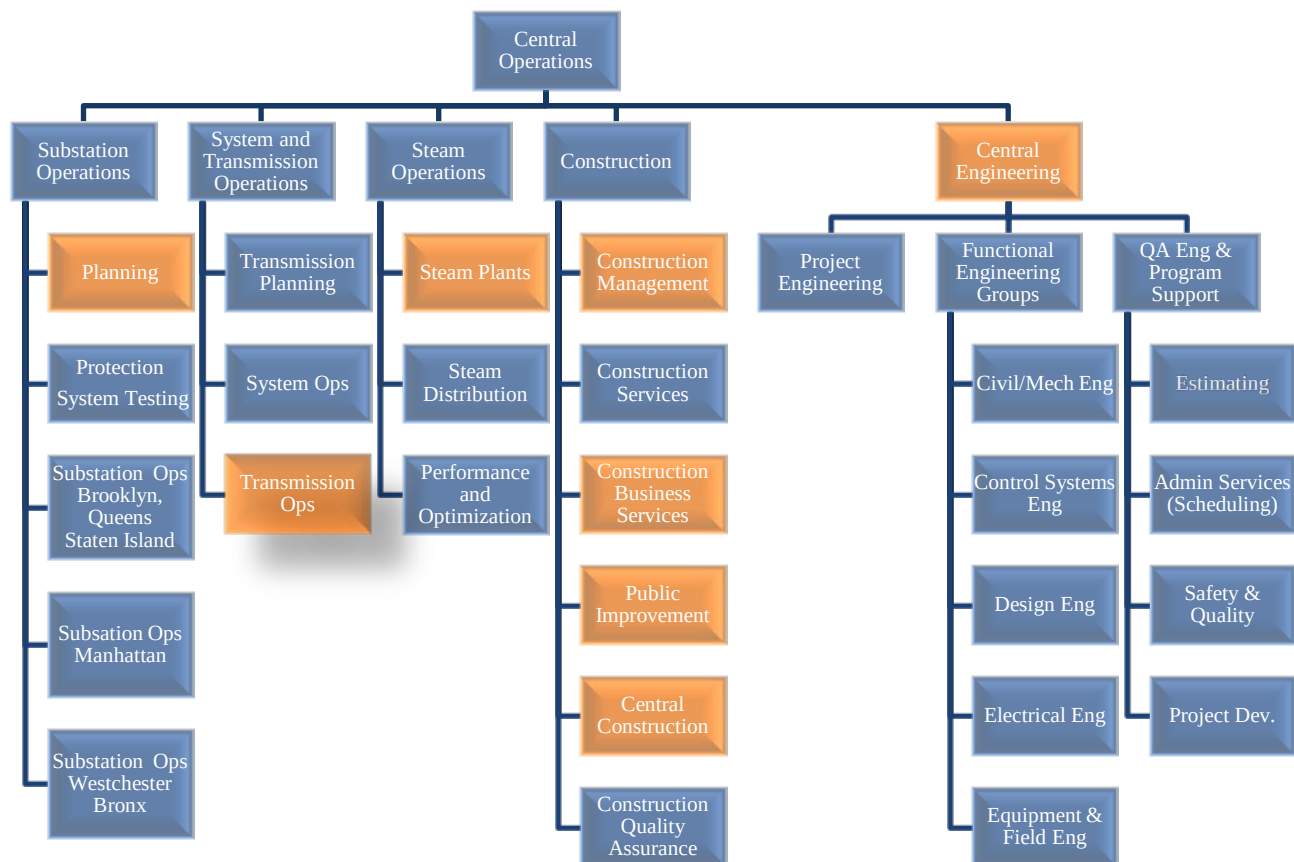
The primary Central Operations organizations involved in program and project management are highlighted in **Exhibit VI-2**, and described below.

- Substation Planning – Provides program and project management services for Substation Operations, contract administration for all work performed by substation contractors and procurement of materials, services and equipment for Substation Operations. The unit also provides project management support to substation and transmission large capital, multi-disciplined projects.²

² DR 1-B Supp2 Attachment 1, DR 851-C

- Transmission Operations – Has a project management group with responsibility for overseeing programs and projects.
- Steam Plants - Overall planning and coordination of station outages is performed by Performance and Optimization in coordination with System Operations and the steam plants. Each Steam Plant and Steam Distribution system has a dedicated Project Manager that oversees programs and projects for that location.

Exhibit VI-2 CECONY Central Operations Organization



Source: DR 1-B Supplement 2 Attachment 2.

- Central Construction – Plans, manages and controls the activities of the fixed price contractor workforce performing construction projects sponsored by Steam, Facilities, Remediation, Substation and Transmission Operations, and other groups as required.³
- Construction Management – Oversees the work of unit price contractors. Plans, and directs the activities of contractor and maintenance and construction crews performing outside plant construction to support new business, system reinforcement,

³ IR 55

gas and electric projects.⁴ The general focus of construction management is street work such as trenching and paving.⁵

- Construction Business Services – Serves as the company’s primary point of contact with the New York City Department of Transportation (DOT) and the New York State DOT. Manages various permitting issues and works with operating groups around the company to improve adherence to the DOT’s Highway Rules and New York City Administrative Code for street work.⁶
- Public Improvement – Coordinates, directs and oversees all municipal project interference-related work in the service territory. Work coordination includes interfacing on a daily basis with numerous City agencies and Westchester municipalities.⁷
- Central Engineering – Provides engineering support to substation, electric transmission, and steam operations. Also, the Quality Assurance (QA) Engineering and Program Support group includes the Estimating group and Scheduling groups, and the Project Engineering group provides project engineers to coordinate engineering activities on large complex projects.

Electric Operations, shown in **Exhibit VI-3**, has a centralized distribution engineering group, but most of its functions are located in the five New York City boroughs and Westchester County. Key organizations involved in project and program management are highlighted in the exhibit.

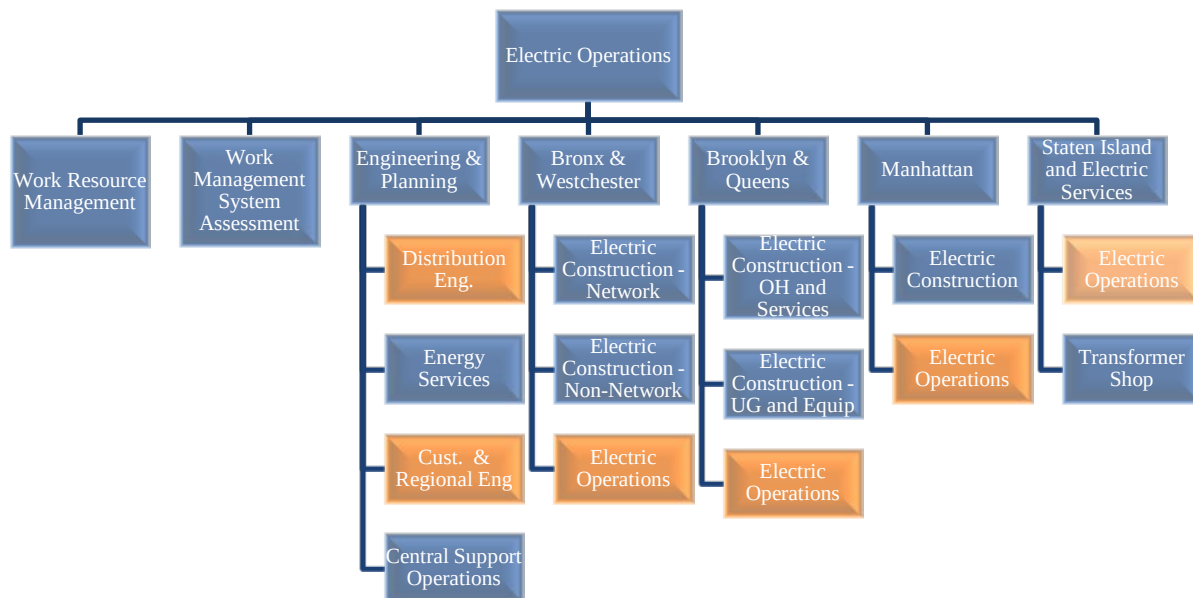
⁴ DR 1-B Supp2 Attachment 1

⁵ IR 55

⁶ DR 1-B Supp2 Attachment 1

⁷ DR 1-B Supp2 Attachment 1

Exhibit VI-3 CECONY Electric Operations Organization



Source: DR 1-B Supplement 2 Attachment 2, DR 819-C Attachment 2

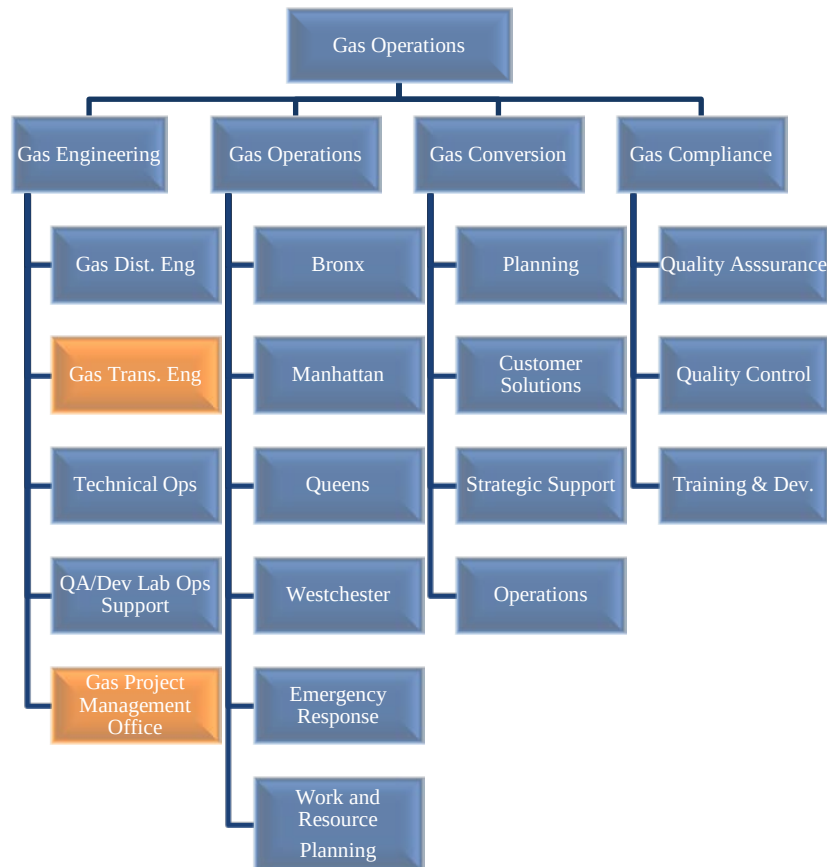
The principal Electric Operations organizations involved in the project management processes are described below:

- **Distribution Engineering** – Provides engineering for the electrical distribution system in all regions. Develops purchase, installation, testing, maintenance, operation and design standards for distribution cable and equipment. Investigates equipment failures and system contingencies to determine root causes and recommends corrective action.
- **Customer and Regional Engineering** – Develops and implements engineering requirements for CECONY’s electric distribution system. Customer and Regional Engineering provides services to all of the programs that fall in to the following categories: New Business, Emergency Response/Emergency Replacement, System Reinforcement, Base Growth/Relief, Reliability and Storm Hardening.⁸
- **Regional Electric Operations Organizations** – Responsible for operation of the distribution system and plan and direct modifications to the system. The Bronx-Westchester, Manhattan, Staten Island and Brooklyn-Queens regional operations groups have project management organizations.

⁸ DR 1-B Supp2 Attachment 2

Gas Operations, shown in **Exhibit VI-4**, has operating organizations in the four regions that CECONY supplies gas: Bronx, Manhattan, Queens and Westchester. An overview of the principal Gas Operations organizations responsible for program and project management is as follows:

**Exhibit VI-4
CECONY Gas Operations Organization**



Source: DR 1-B Supplement 2 Attachment 2, DR 819-C Attachment 2.

- Gas Transmission Engineering – Directs and sets policies for the overall engineering requirements for the Company's gas transmission systems. The department provides engineering for the transmission system which includes performing design functions to meet operating needs, assuring transmission pipeline integrity, performing major project design, and providing field engineering.⁹ Up until 2015, this group included a Major Project Engineering section that was responsible for project engineering and project management for major projects. In 2015, responsibility for project management was transferred to the newly formed Gas Program/Project Management group, and Gas Transmission Engineering retained engineering responsibilities.¹⁰

⁹ DR 295-B Attach 85 Confidential Response

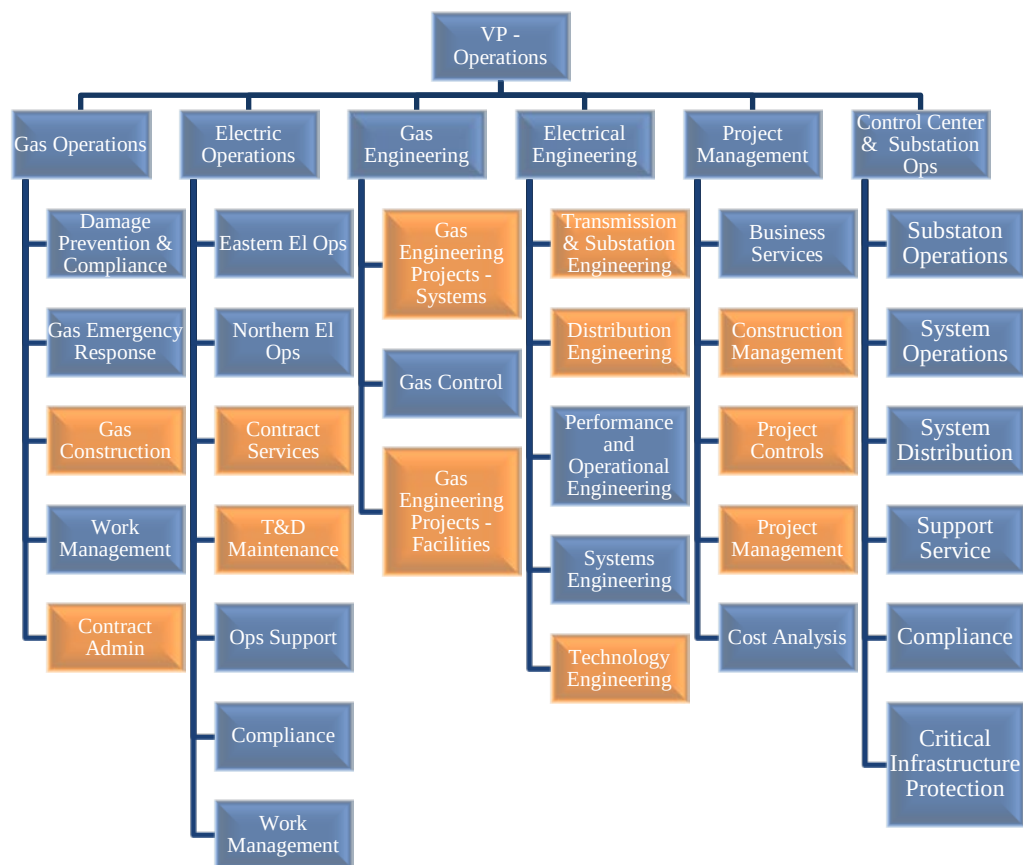
¹⁰ DR 1-B Supplement 3 Attachment 2

- Gas Program and Project Management Office – Newly established group that will take on responsibilities for gas program and project management. (See Conclusion VI-26).

O&R Project Management

The primary organizations responsible for the O&R's programs and projects are shown in **Exhibit VI-5**. Gas Operations, Electric Operations and Substation Operations are supported by dedicated engineering groups, and a separate Project Management Department.

Exhibit VI-5
O&R Operations Organizations



Source: DR 819-O Attachment 1.

As a result of internal evaluations and an awareness of the recommendations in the 2008-2009 Liberty Management Audit of CECONY,¹¹ O&R restructured the capital delivery processes and established a centralized Project Management Department (PMD). PMD has

¹¹ The 2008-2009 Liberty Management Audit of CECONY recommended, among other things, that the CECONY Electric Operations department implement a work management system and design and implement project and program management procedures and expectations. Electric Operations' implementation of a work management system is addressed in Chapter VII – Work Management. CECONY's project and program management procedures are addressed in Conclusions VI-4 and VI-28.

responsibility for managing and implementing O&R's large capital projects. Currently, PMD is composed of 21 staff members with expertise in project management, scheduling, estimating, cost control, engineering, permitting and construction.¹²

In the past five years, PMD has implemented process improvements and best practices including:

- Project reviews, controls and earned value tracking,
- Project Management Institute (PMI) based project structure,
- Project charters and management plans,
- Standardized and centralized estimating/scheduling,
- Schedule-based budgeting and forecasting,
- Standardized construction specifications,
- Increased construction oversight and contract documentation,
- Expanded and refined constructability review process,
- Streamlined permitting process and expanded resources,
- Development and documentation of project processes, and
- Project management training.¹³

Projects are generally assigned to PMD if the total project value is \$5 million dollars or greater, or if the project is deemed by O&R executive management to be of high strategic value.¹⁴ Smaller projects not supported by PMD are managed by engineers in the Gas Engineering and Electrical Engineering organizations.¹⁵

A breakdown of 2012 to 2014 capital expenditures by responsible organization is shown in **Exhibit VI-6**.

Exhibit VI-6
O&R Capital Expenditures by Responsible Organization
(\$ in Thousands)

	2012	2013	2014
Project Management		\$ 996	\$ 4,102
Transmission & Substation Engineering	\$ 15,244	28,590	29,085
Distribution Engineering	8,590	9,112	6,929
Control Center	646	2,000	10,084
Gas Operations	35,909	33,009	31,960
Electric Operations	41,357	34,810	31,522
Substation Operations	256	273	655
Total	\$ 102,002	\$ 108,789	\$ 114,336

Source: DR 33-O Attachment 1.

¹² DR 11-C

¹³ DR 11-C

¹⁴ DR 396-O

¹⁵ DR 354-O

Detailed Project Review

In order to fully understand and assess the utilities' program and project management processes, NorthStar performed a detailed review of the 19 CECONY and 7 O&R programs and projects listed in **Exhibit VI-7**. The programs and projects were selected to provide a cross-section of large and small projects in electric, gas and steam and performed by organizations throughout the companies. We reviewed contemporaneous project documents and interviewed project personnel (when available), using the NorthStar project management checklist (**Exhibit VI-8**) as a guide.

NorthStar's selection of capital programs and projects for detailed review also included two programs that were not facilities construction: one related to temporary services and another to transformer purchases. These projects are not typical "capital projects" and are not included in any analyses of project review results.

Exhibit VI-7 Projects Selected for NorthStar's Detailed Project Review

Group/Sponsor	Project	Program	Cost (\$M) [Note 1]	Completion Date [Note 2]
CECONY				
Central Operation - Public Improvement	Water Mains	Stand-Alone Project	\$6.1	2015
Central Operations - Transmission and Substation Operations	Astor Area Substation	Stand-Alone Project	\$139.2	2011
Central Operations - Transmission and Substation Operations	Newtown Substation Below Grade Contract	Stand-Alone Project	\$125.7	2011
Central Operations - Transmission and Substation Operations	Astoria Interconnection	Stand-Alone Project	\$8.6	2015
Gas Operations - Transmission	Install Gas Regulator Station	Stand-Alone Project	\$4.5	2013
Central Operations - Transmission and Substation Operations	Replace Transformer	Transformer Replacement Program	\$5.8	2012
Central Operations - Transmission and Substation Operations	13th St Storm Hardening	Storm Hardening	\$29.2	2014
Central Operations - Steam	59th St Storm Hardening	Storm Hardening	\$2.4	2014
Central Operations - Transmission and Substation Operations	Relay Replace.	Relay Modifications	\$3.7	2012
Electric Ops	Overhead Storm Hardening - Bronx Westchester	Storm Hardening	\$21.4 (program)	2014
Gas Distribution	Oil to Gas Conversion	Oil to Gas Conversion	\$1.1	2014
Electric Operations	New Business	New Business	\$2.0	2014
Gas Operations	Medium Cast Iron Replacement Program	Medium Cast Iron Replacement Program	\$1.5	2015
Central Ops - Steam	75th St. Gas Piping	Mechanical Equipment Replacement	\$72.1	2013
Central Ops - Substation and Transmission Operations	Woodrow Substation - install Third Transformer - old project	Load Relief	\$49.0	2010
Gas Operations – Transmission	Bronx to White Plains	Load Relief	\$5.0	2013
Gas Operations	Leak Prone Pipes - W. 18 th	Leak Prone Pipe Replacement	\$0.4	2015
Central Operations - Steam	Unit 6 Gen Protect	Electric Equipment Replacement	\$1.7	2012
Electric Operations	Install motor operated valve to detention tank	EH&S Risk Mitigation	\$1.2	2012

Group/Sponsor	Project	Program	Cost (\$M) [Note 1]	Completion Date [Note 2]
O&R				
Project Management/Transmission & Substation Engineering	Transmission Line 28	Stand-Alone Project	\$39.5	2015
Project Management / Gas Engineering	Route 49/78 Gas Transmission	Stand-Alone Project	\$7.4	2014
Transmission	Lines 551/563 Structure Replacement	Stand-Alone Project	\$1.5	2014
Project Management/ Substation and Distribution Engineering	New Hempstead Substation	Stand-Alone Project	\$17.3	2015
Distribution and Underground Engineering	Montebello Rd Underground	Storm Hardening	\$2.0	2014
T&D Maintenance (Project Manager)	Willow Grove - Replace wire with Hendrix	Storm Hardening	\$0.8	2014
Gas Engineering, Contract Administration Group (CAG)	Erie Street Main Replacement	Main Replacement	\$0.2	2014

Note 1: Cost data from the most recent Current Working Estimate (CECONY) or Cost Variance Report (O&R) provided in the project review documents.

Note 2: Completion year is the year construction work completed. Project close-out activities might be completed in following year.

Source: DRs 408-C through 432-C; and DRs 433-O through 439-O Confidential Response.

Exhibit VI-8 NorthStar Project Management Checklist

	Project Management Activity	Performed and Recorded	Performed, Not Recorded or Poor Documentation	Not Performed
1	Project White Paper			
	a. Project Purpose and Need			
	b. Alternatives			
2	Project Approval			
	a. Delegation of Authority			
	b. Appropriation			
3	Projects scope and deliverables are fully defined			
4	High level schedules are developed which consider system availability, interdependencies and completion requirements			
5	Project activity sequences are established and required resources are identified and scheduled			
	a. Engineering			
	b. Procurement			
	c. Construction			
6	Project estimates are documented			
	a. Order of Magnitude			
	b. Preliminary			
	c. Construction/Current Working Estimate			
7	A well-defined work breakdown structure is used to track and monitor project performance			
8	There is evidence of construction oversight			
9	Project scope changes are effectively controlled and communicated among participants and documented in a change log			
10	Project change orders are approved per procedure			
11	Project progress is tracked and reported			
	a. Cost			

Project Management Activity		Performed and Recorded	Performed, Not Recorded or Poor Documentation	Not Performed
	b. Schedule			
	c. Percent complete			
12	Cost and schedule variances are identified and causal factors determined and reported			
13	Project work quality is checked and defects corrected prior to acceptance			
14	Project close-out activities including as-built, final cost, schedule, lessons learned, and turnover to operations are performed promptly			
15	Work orders closed and transferred to plant accounting in a timely fashion			

B. EVALUATIVE CRITERIA

The evaluative criteria were taken from the final work plan and include both the Staff's evaluative criteria from the RFP and those added by NorthStar in its proposal.

- Do CECONY and O&R have sufficiently robust project and program management processes and procedures which encompass all aspects of the project management processes (e.g., design, engineering, scheduling, execution, review)?
- Do CECONY and O&R have effective quality control and quality assurance programs to ensure goals, objectives and performance measurements are met and accountability is appropriately assigned?
- Do CECONY and O&R effectively oversee and manage the work of contractors? Do they ensure contractors are properly trained and qualified? Do they inspect contractor work?
- Are contracts evaluated and awarded on an impartial basis?
- Does O&R have sufficient contracting controls and procedures to protect the utility against unjustified contractor expenditures?
- Do CECONY and O&R have adequate systems and procedures for tracking costs, work units and work quality for specific programs and projects and are they effective? (Also see Chapter VII – Work Management)
- Do CECONY and O&R have appropriate leak prone pipe replacement programs which consider flood zone management, risk models and other factors to prioritize mains for replacement, verify that high risk pipes are replaced, and assess the program's impact on total system leaks? (See Chapter IV – System Planning)
- Are decisions regarding the use of in-house versus contract resources reasonable, adequately documented and based on sound criteria?

- Are project quality control and technical requirements effectively communicated and transferred to contractors?
- Are project elements appropriately defined? Do the companies use a well-defined Work Breakdown Structure (WBS) to estimate, track and monitor project performance?
- Is project performance reported on a timely, meaningful basis to appropriate personnel to facilitate corrective action?
 - Is monitoring and controlling against project baselines for scope, budget, and schedule performed?
 - Are project estimates accurate and updated on a periodic basis?
 - Are project scope changes effectively controlled and communicated?
 - Are project change orders managed and controlled effectively?

C. FINDINGS AND CONCLUSIONS

1. NorthStar's detailed review found that CECONY and O&R project management is generally adequate; however, there are opportunities for improvement.

- A high level overview of the results of NorthStar's detailed testing is shown in **Exhibit VI-9**.

Exhibit VI-9
High-Level Overview of NorthStar's Detailed Testing Results [Note 1]

Project Management Activity	CECONY	O&R	Comments	See Conclusion(s)
White Paper/Project Charter	Yes – For Stand-alone projects	Yes – large projects	Only developed for large stand-alone projects.	VI-2
Project Appropriation/Scope Defined	Yes	Yes		VI-2
Project Estimate	Yes	Yes	Inconsistent use of contingency. Not all costs included.	VI-3
Schedule	Not always	Not always	Schedules typically developed and updated for large projects, but not always for smaller projects.	VI-4
WBS	No	Yes – to track large projects	Only used by O&R PMD and is not used to estimate projects.	VI-5
Construction oversight	Yes	Yes		VI-10, VI-11
Project change orders effectively controlled	Yes	Not for smaller projects		VI-14, VI-15
Cost tracked and reported	Yes	Yes	CECONY reported project costs may not contain all costs	VI-17, VI-18 VI-19, VI-20

Project Management Activity	CECONY	O&R	Comments	See Conclusion(s)
Schedule tracked and reported	Not always	Not always	Schedules typically developed and updated for large projects, but not always for smaller projects.	VI-20
Project work quality is checked	Yes	Yes	Inspection Reports Field Checks Testing QA/QC	VI-8
Project close-out activities performed promptly	Yes	Yes	Detailed testing verified close-out activities were performed promptly.	
Work orders closed in a timely fashion	Yes	Yes	Detailed testing verified work orders were closed timely.	

Note 1: Grey highlight indicates NorthStar found inadequacies in this area.

Source: NorthStar detailed project review.

- NorthStar examined other areas in addition to the detailed testing. These areas are included in the conclusions below.

2. CECONY and O&R provide project and program scope definition. While CECONY and O&R typically only prepare a detailed project scoping document (a white paper, or project charter) for stand-alone programs and projects, the appropriation requests include adequate scope detail for projects that are part of programs.

- In general, the purpose of a Project Scope Statement is to provide a baseline understanding of the scope of a project and deliverables, the work required to complete the deliverables, and ensure a common understanding of the project's scope among all stakeholders. The Project Scope Statement defines the following:
 - Purpose and justification of the project
 - Scope description
 - High-level project requirements
 - Project boundaries
 - Project strategy
 - Project deliverables
 - Acceptance criteria
 - Project constraints
 - Project assumptions
 - Cost estimates
 - Cost/benefit analysis.
- As discussed in Chapter IV – System Planning and in Chapter V – Capital and O&M Budgeting, white papers are used for project/program selection in the capital budget process. The white papers are in essence detailed business cases for each proposed project or program. These white papers employ a standardized structure so that assumptions can be compared on an “apples-to-apples” basis

- CECONY and O&R have proper templates for white papers.¹⁶
- For larger projects, O&R develops a Project Charter, a document that formally authorizes the existence of a project and provides the Project Manager with the authority to organize and coordinate organizational resources for the project.
- NorthStar's project review found that white papers/project charters were not prepared for smaller projects or projects that were part of a program. When provided, the white papers and project charters were prepared in accordance with the template and provided necessary scope definition to begin the project.
- CECONY and O&R require a formal appropriation request for any project greater than \$100,000.¹⁷
- NorthStar's project review found that appropriation requests were properly prepared and funds were appropriated in accordance with the delegation of authorities. In addition for projects we reviewed that were part of programs, the appropriation documentation included:
 - Project design
 - Justification
 - Alternatives
 - Funding
 - Appropriation estimate.¹⁸

3. Capital project estimating is performed by a variety of groups using different procedures, some of which are not documented. Only two groups have estimating procedures. There are varying approaches to determine contingency amounts, some of which are inconsistent with corporate procedures. NorthStar also found that estimates do not include all project costs if some of the costs have previously been booked to another program.

- **Exhibit VI-10** provides a summary of CECONY and O&R organizations that prepare capital project estimates and the procedures used to develop the estimates.
- CECONY's Central Engineering Estimating section and O&R's Project Management Department are the only two organizations that have written estimating guidelines and those guidelines are incomplete.
 - The guidelines do not describe how to estimate project costs; rather they define the different levels of estimates (such as budget or order of magnitude, appropriation, contractor bid and current working estimate), and the data necessary to develop each level of estimate.

¹⁶ DR 507-C Attachment 2

¹⁷ DR 171-C

¹⁸ Detailed Project Review

- The guidelines also define the responsibilities of estimators, engineers and other team members in the development review and approval of estimates.¹⁹

Exhibit VI-10
Organizations that Develop Capital Project Estimates

Organization	Type of Projects	Group that Does Estimating	Procedure
CECONY			
Electric Operations	Projects in authorized programs	Regional Engineering Groups	No [Note 1]
Gas Operations	Larger Projects	Gas Transmission Engineering	No
	Smaller projects in authorized programs	Gas Engineering	No
Central Operations	All	Central Engineering Estimating	Yes
O&R			
Electric Operations	<\$5 million	Engineering	No
Gas Operations	<\$5 million	Engineering	No
Project Management	>\$5 million	Project Controls	Yes

Note 1: CECONY provided NorthStar with the Manhattan Engineering Estimating Training Manual issued in August 2010; however, the document is incomplete and there is no indication it is used.

Moreover, it is specific to Manhattan.

Source: DR 171-C and All Attachments; DR 171-O and All Attachments.

- There is a formal approval process for the appropriation estimates prepared by CECONY Central Operations Estimating and O&R Project Management Department before the estimates are used for capital funding requests.
 - At CECONY, the appropriation estimate is approved by each of: Lead Discipline Engineer, Project Engineer, Project Manager, and Construction Manager.²⁰
 - At O&R, the appropriation estimate is approved by the Lead Discipline Engineer and Project Manager.²¹
- As is standard practice, different estimates are developed during the project lifecycle based on the level of design detail. CECONY and O&R procedures specify different contingency rates (referred to as an “accuracy factor” in the CECONY procedure) for similar estimates, as summarized in **Exhibit VI-11**.

¹⁹ DR 171-C Attachment 6, DR 171-O Attachment 1

²⁰ DR 171-C Attachment 6

²¹ DR 171-O Attachment 1

Exhibit VI-11 Estimates and Contingency Rates

CECONY Central Estimating	O&R Project Controls	Description	CECONY	O&R
Concept Estimate	Not Used	Generally used for advanced planning to compare the cost of project alternatives or for project feasibility. Based on limited engineering information.	30%	Not used
Order of Magnitude	Budget Forecast	Based on preliminary engineering information at project initiation. Its purpose is to provide a screening of feasibility of project costs so the requestor can decide whether to proceed with the design of the project or to evaluate other alternatives.	30%	30% to 50%
Appropriation Estimate	Appropriation Estimate	Cost estimate that is used to allocate money for a specific project as part of project funding. It includes all direct and indirect costs of the project including labor, equipment, material corporate overheads, escalation, contingency, and other associated costs such as retirement costs	10%	5% to 20%

Source: DR 171-C Attachment 6, DR 171-O Attachment 1

- In 2012, CECONY issued *Estimating Cost Contingency Guidelines* for corporate use. The guidelines require the estimators to enter a scope confidence grade, and a cost confidence grade to determine project contingency.²²
 - These guidelines are only used by O&R for large project estimates.²³
 - CECONY departments ignore the corporate-wide guidelines.
 - Gas Distribution assigns a contingency of 10 to 15 percent for each project.
 - Gas Transmission engineering assigns a contingency of 10 to 20 percent for each project.
 - Central Engineering's Estimating Section performs an assessment of the project documents, constructability and means and methods. The Estimating Section maintains project information (folders) as a basis for contingency determination
 - Electric Operations generally uses a 10 percent contingency as the standard.²⁴
- NorthStar's detailed project review identified at least one project estimate that did not include all project costs as the equipment had been booked to another program.
 - A 2011 project to replace a transformer at Washington Street substation did not include the cost of the transformer in the project estimate, therefore the project estimate, and likely booked project costs, did not reflect actual project costs.

²² DR 462-B

²³ DR 691-O

²⁴ DR 691-C

- The transformer had been purchased for another project.
- The typical cost to replace an area substation transformer is \$14 million.²⁵ The appropriation estimate for the entire Washington Street substation project was just \$5 million (final cost was \$5.8 million not including the transformer).²⁶

4. CECONY and O&R develop project schedules for large projects and track project performance against the baseline schedule. Different organizations use different processes to develop schedules. Small projects often do not have schedules.

- CECONY organizations currently use Microsoft Project, Microsoft Access and Primavera P6 to develop project schedules.²⁷
 - The Scheduling Group (Administrative Services) in Central Engineering prepares schedules for Central Operations operating organizations.
 - Construction Services develops Microsoft Project schedules based on the work identified in the Engineering package. The schedule is developed by a Planner and reviewed with the Construction Manager. It is then reviewed and accepted by the respective Project Manager (e.g., East River Station) before work proceeds.²⁸
 - Electric Operations Engineering groups track major project milestones using Microsoft Project.²⁹
- O&R Project Control schedules capital projects managed by the PMD using Primavera P6.³⁰
- As discussed in Conclusion VI-27, with the exception of Electric Operations, CECONY and O&R are in the process of shifting to Primavera P6 for project scheduling for all the organizations.
- For large projects at both CECONY and O&R, the construction schedule is provided by the contractor and incorporated into the overall project schedule.³¹
- O&R does not typically develop a schedule for projects not managed by PMD.
 - O&R Electric Operations, Substation Operations, and Gas Operations use Work Management System (WMS) to plan operations and maintenance (O&M) work. See Chapter VII – Work Management for a discussion of WMS.
 - O&R’s WMS tracks planned and actual milestone dates, but WMS does not produce a project schedule.³²
 - Progress is addressed in the weekly updating of unit sheets or is discussed in meetings.³³

²⁵ DR 408-C Attachment 1

²⁶ DR 408-C Attachments 2 and 29

²⁷ DR 169-C

²⁸ DR 506-C

²⁹ DR 169-C

³⁰ DR 355-O

³¹ NorthStar detailed document review.

³² DRs 435-O, DR 433-O, DR 439-O Confidential Responses

- NorthStar’s detailed project review found that for large projects, CECONY and O&R developed project schedules and tracked project performance against the baseline schedule; however, smaller projects managed by Electric Operations or Gas Operations did not always have a schedule. The progress of smaller projects is discussed in meetings, daily phone calls, unit reports, and tracked in work management systems or databases.³⁴

5. Only O&R PMD uses a work breakdown structure to monitor and track project performance. The work breakdown structure is not used to develop project estimates.

- Effective capital project management uses a hierarchical WBS to organize project elements into logical bundles of functional work representing discrete work activities that enable scheduling, resource loading and objective progress measurement. The WBS provides the basic framework to plan, execute, and manage the project. WBS coding permits precise identification of project elements to allow accurate project management, budgeting, communication, cost reporting, scheduling and performance.
- NorthStar’s detailed project review found that CECONY does not use a WBS.
- O&R does use a formal standardized WBS for projects managed by PMD. As mentioned in Conclusion VI-4, PMD uses Primavera P6 to schedule projects. Primavera P6 uses work breakdown structures.
 - The WBS is a deliverable-oriented hierarchical decomposition of the work to be executed by the project team.
 - It contains the high level process flow (Project Initiation, Scope Development & Funding, Design, Sourcing, Construction, Closeout), and, within each of these, further layers of detailed work categories such as project management planning, budgeting, appropriations, in house engineering, outsourced engineering, and permitting. There are specific activities in each layer.³⁵
- As discussed in Conclusion VI-27, with the exception of Electric Operations, CECONY and O&R are shifting to Primavera P6 for project scheduling. The implementation of Primavera P6 entails the development of standardized work breakdown structures.

6. CECONY and O&R have reasonable approaches to making decisions to use in-house versus contracted resources.

- The largest user of contracted services is CECONY’s Central Operations organization which includes the functions of Central Engineering, Construction, Steam Operations, Substation Operations and System and Transmission Operations.

³³ DRs 435-O, DR 433-O, DR 439-O Confidential Responses

³⁴ NorthStar detailed project review: DRs 408-C to 431-C

³⁵ DR 694-C

- CECONY Electric Operations and Gas Operations use contractors on a case-by-case basis, such as when the workload exceeds the capacity of CECONY forces, or when a specific project requires a skill set which CECONY forces do not possess.³⁶
- CECONY's decisions to use contractors to perform work are governed by a Human Resources Guidance Memo entitled "Evaluation of the Use of Contractors to Perform Work for the Company."³⁷ **Exhibit VI-12** summarizes three categories of contractor usage and the management rationale for each.

Exhibit VI-12
Basis of CECONY Decision to Use Contractors

Category of Contractor Usage	Management Rationale
Project Specific Contractors are used to complete project-specific work with a defined scope.	• The work to be performed requires a complex, unique, or highly specified degree of expertise that the business unit cannot meet. • The work to be performed requires equipment not available to or operable by CECONY employees. • The business unit is unable to meet project milestones and/or schedules based on current workload. • The project specification or work package is sufficient to utilize in the procurement process. • The project schedule allows for sufficient time to procure contract resources. • The project estimate includes costs for contract resources and appropriate oversight.
Workforce Augmentation Contractors perform work to meet a peak workload or address an emergency situation.	• The projected work volume and frequency are not supported by the business unit based on the current workload. • The work package is sufficient to determine contractor resource requirements. • The work schedule allows for sufficient time to procure contract resources. • The working budget includes allocation for contract resources and appropriate oversight.
Outsourced Contractors perform an entire work function.	• The skill set required is not one of the core skill sets that CECONY wants to maintain, that currently exists within CECONY, or that CECONY wants to develop in the workforce. • The work to be performed requires a complex, unique, or highly specified degree of expertise that the business unit is unable to meet or support. • The work to be performed requires equipment not available to or operable by CECONY employees. • The projected work volume and frequency are not supported by the business unit and are sufficiently defined to utilize in the procurement process. • The work schedule allows for sufficient time to procure contract resources. • The working budget includes allocation for contract resources and appropriate oversight.

Source: DR 175.

³⁶ DR 175-C Attachment 2, Evaluation of the Use of Contractors to Perform Work for the Company

³⁷ DR 175-C, Central Engineering Operations Manual CE-0106, Contract Administration for Engineering and Design Consulting Services

- O&R's use of contractors is based on available manpower, equipment, costs and skills. For example:
 - As a result of the increase in O&R's Advanced Metering Infrastructure (AMI) work, O&R requires additional properly trained resources so this work is currently being competitively contracted. As internal staff skills are developed, costs will be compared and the work may be shifted back in-house or lower contract costs re-negotiated.³⁸
 - For Electric Overhead projects, the use of contractors is based on the amount of work that company personnel cannot perform.
 - Services such as infrared and interference inspection, require special equipment and skills that are not readily available in-house or maintained full time.
 - A variety of services such as pole inspection are high-volume, low-skill tasks that can be performed at a lower cost than company crews. The work is usually paid on per unit basis and is competitively bid.
- O&R Gas Operations generally uses contractors for main and service replacement, new business installations and field inspection. Contractors are also used for leak repair and line locating, although those work functions use contractors to offset peak work volumes.

7. CECONY and O&R's use of bid check estimates to check contractor bids is a good practice; however there is no formal guidance regarding follow-up actions when the bid check estimate is the low bid.

- CECONY's Cost Management' Bid Check Estimating group develops estimates to compare to contractor bids.³⁹
- The Bid Check group receives the same bid package as contractors and prepares a bid based on its knowledge of labor rates and material costs.
- Bid Check's estimate is presented as a sealed bid and used by Purchasing for comparison with contractor bids for construction projects.⁴⁰
- CECONY and O&R contractor requisitions greater than \$500,000 require a Bid Check Estimate.⁴¹
- Bid Check Estimating also prepares bid check estimates for:
 - Contractor Performance Statements greater than \$500,000 (Conclusion VI-12)
 - Contract change orders greater than \$25,000.⁴²

³⁸ DR 175-O Attachment 1 Contractor Staffing Guidance Rev 2.

³⁹ DR 11-C Attachment 15

⁴⁰ DR 518-C Attachment 2

⁴¹ DR 184-O Attachment 1, DR 172-C Attachment 2

⁴² DR 11-C Attachment 15

8. Project requirements are appropriately communicated to contractors.

- CECONY and O&R's construction contracts contain a scope of work (SOW) and special conditions for the job that are site- and job-specific.⁴³ The SOW, along with the special conditions define:
 - The work to be performed and the work schedule.
 - Performance and quality requirements.
 - Technical specifications.
 - All contract deliverables. Deliverables will be verifiable and measurable. For example, on a lump sum contract, the deliverables can be set as milestones based on percentage of completion.
 - Environmental, Health and Safety (EH&S) requirements, safety regulations, environmental criteria, quality assurance, site support, and other documentation required to be submitted by the vendor.
 - Schedule of progress meetings.
 - Submittals and documentation to support requests for payments.
 - Departmental procedures, local operating conditions and site-specific laws, rules, and regulations.
 - Contract change or modification process if not already specified in the applicable Standard Terms and Conditions.⁴⁴
- Both O&R and CECONY have pre-award meetings between the successful bidder and the project team as required to ensure there is a clear understanding of the project requirements.⁴⁵
- CECONY's Supplemental Construction Contract Requirements procedure provides the contractor with CECONY's requirements for the contractor's management of work. During the term of the contract, the contractor must provide:
 - Construction Schedule – Level III critical path method (CPM) schedule
 - Attendance at weekly progress meetings
 - Weekly Meeting Minutes if contract is greater than \$5 million
 - Daily Performance Log for each shift worked
 - Weekly Performance Log (upon request)
 - EH&S Plan for the work.⁴⁶
- NorthStar's detailed project review found that the contractors provided the documents requested in the Supplemental Construction Contract Requirements.⁴⁷

⁴³ DR 184-O Attachment 1, DR 172-C Attachment 2

⁴⁴ DR 184-O Attachment 1

⁴⁵ DR 168-C Attachment 1

⁴⁶ DR 172-C Attachment 6

⁴⁷ NorthStar did not request or review project EH&S Plans.

9. Both O&R and CECONY have appropriate organizations to oversee the work of contractors and document contractors' performance in the corporate-wide Contractor Oversight System (COS). O&R's procedures do not provide adequate guidelines regarding the use of COS.

- CECONY's Central Operations Construction Department provides construction oversight for all of CECONY. There are three primary oversight organizations:
 - Central Construction manages lump sum construction contracts.
 - Construction Management is responsible for the oversight of unit price contractors for all company work.
 - Public Improvement is responsible for all municipal project activities in a given area.⁴⁸
- The principal contractor oversight positions in CECONY's Construction Management and Central Construction are Construction Managers, Chief Construction Inspectors (CCI), and Construction Inspectors (CI).
 - The Construction Manager assumes responsibility for all contracts in his/her borough, and assigns work to the CCI and CIs.⁴⁹
 - A CCI is assigned to one or more projects. CCIs are first line construction management supervisory personnel who have both construction management as well as supervisory responsibilities and are generally responsible for three to four CIs.⁵⁰
 - At least one CI is assigned to each construction project. CIs are union personnel who are trained to manage the day-to-day activities of the contractor's field personnel. The duties of the CIs include, but are not limited to:
 - Job set-up review
 - Schedule review and compliance
 - Inspection of work
 - Environmental and safety compliance
 - Completion of the CECONY daily log book (i.e., the appropriate field record)
 - Input into the COS
 - Project closeout procedures.⁵¹
- O&R's Gas Operations construction contractor oversight is performed by the Contract Administration Group (CAG).
 - CAG is responsible for the oversight of contractors that perform gas main and service installation work.
 - Most of the contracts that are managed by CAG are unit price contracts.

⁴⁸ DR 455-C

⁴⁹ DR 455-C

⁵⁰ DR 455-C

⁵¹ DR 455-C Attachment 1

- CAG has a Section Manager, a Planner, multiple CCIs and both contract inspectors and bargaining unit inspectors who oversee field work being performed.
 - The work is assigned by the Planner to each CCI based on the type of work being performed (main installation, new business or municipal oversight) and workload (ensuring work balance between each CCI).
 - Each individual project has an inspector assigned to the project to oversee the field work.⁵²
- O&R's Electric Operations Transmission and Distribution Maintenance (TDM) Department is responsible for electric construction contractor oversight of work on the overhead distribution system.
 - TDM ensures that work completed is built to design and that the contractor follows O&R construction standards.
 - TDM is staffed by a Manager and three Field Supervisors that oversee work in progress.
 - TDM Field Supervisors meet with Contractor Leads in advance to review each project's scope and schedule and meet with contractor crews daily to review work scheduled for the day. They also handle material requisitioning and ensure that proper safety and work zone area protection procedures are followed. In addition, Field Supervisors coordinate field switching with the Operating Authority and provide technical support and guidance to the contractor crews.⁵³
 - O&R's PMD's Construction Management organization is responsible for large project construction contractor oversight.⁵⁴
 - Construction Management is led by a Construction Manager that supervises several Construction Specialists. A Specialist is assigned to oversee field work for each PMD capital construction project.
 - Specialists and Construction Managers receive formal training in their respective area of work (i.e., gas, electric or project management).
 - The Specialist meets with the contractor in advance to review each project's scope and schedule as well as with the contractor's crew daily to review work scheduled for the day.⁵⁵
 - CECONY and O&R construction oversight organizations use the COS to document performance observations and/or issues. COS is a management system used to track and report contractor EH&S and work performance. There are four main inputs into the COS system:
 - Contractor Field Observation Report (CFOR) – Captures EH&S-related information. Field inspectors prepare the CFOR during the execution of work.

⁵² DR 849-O

⁵³ DR 849-O

⁵⁴ DR 849-O

⁵⁵ DR 849-O

CFORs are required at least once per six-month period, however, in practice, they are generally submitted more frequently.

- Contractor Evaluation Report (CER) – Documents the general performance of a contractor.⁵⁶ CERs are completed at the end of the project, or every six months.
 - Infraction Report – Documents any EH&S issues that occur but are resolved between construction management and the contractor.
 - Action Line – A means to report and resolve any EH&S issues that cannot be resolved between construction management and the contractor or by other normal means, and requires Purchasing to intervene.⁵⁷
- Inputs to COS influence the contractor’s rating, bid multiplier and ultimately the contractor’s ability to be awarded company work.⁵⁸
 - The CFORs and CERs affect the Performance Evaluation Factors and Bid Multipliers that are generated by the system for each contractor.
 - Action Lines and Infraction Reports are used by Purchasing to aid with bid list preparation.⁵⁹
 - The CIs prepare the inputs to the COS, as described in CECONY’s Contract Administration Manual.
 - The CI prepares a CFOR which documents whether the work is performed satisfactorily, in areas such as work quality, use of protective equipment, and job site condition. If the CI identifies any issue with the contractor’s work, the issue is documented in the CFOR and discussed with the contractor.
 - If the contractor does not take necessary corrective action, the CI will issue an Infraction Report to the contractor.
 - The CI also completes a Contractor Evaluation Report at the end of the contract, or every six months for long-term contracts.⁶⁰
 - NorthStar’s project review found that both CECONY and O&R inspectors routinely prepared CFOR and CERs.
 - NorthStar’s review also found that O&R followed the same general process as CECONY, in spite of the fact that the O&R Construction Management Manual does not provide adequate guidance. It merely states that the Project Specialist/Chief Construction Inspector/Construction Inspector “[p]repare and file daily project reports and utilize Contractor Oversight System (COS) as appropriate.”⁶¹

⁵⁶ DR 184- C Attachment 2

⁵⁷ DR 405

⁵⁸ DR 405

⁵⁹ DR 184- C Attachment 2

⁶⁰ DR 168-C Attachment 9

⁶¹ DR 168-O Attachment 3

10. CECONY has an established contractor oversight rotation policy in order to minimize the opportunities for malfeasance; O&R does not have a formal rotation policy.

- In accordance with its Construction Management Rotation Policy, CECONY Construction Managers assume responsibility for all contracts in their borough for a period of no more than five years.⁶²
- CECONY union inspectors⁶³ that exceed 60 percent coverage of an individual contractor over a consecutive five-year period, based on the COS and CFOR totals, are either rotated from their assigned area or are removed from oversight of that contractor for a period of no less than 24 months.⁶⁴
 - The percentage of time that union inspectors oversee specific contractors is determined using COS, with the use of manual records when necessary.
 - Manual records are kept for Public Improvement inspectors.⁶⁵
- According to O&R personnel, O&R does rotate the assignments of its construction inspectors, however there is not a formal contractor rotation policy.⁶⁶

11. CECONY uses formal, well-defined processes and procedures to ensure the validity of contractor payments.

- At CECONY, payments for fixed price work are governed by a formal procedure and based on contractor Performance Statements which breakdown the work into tasks with assigned quantities and component costs. The invoice and Performance Statements are reviewed by the Contract Administration group in the Construction Business Services organization, a separate group from the field oversight organizations.
 - The Performance Statements quantify units of work completed and associated cost percentages for the current pay period and project-to-date.
 - Before work begins, the Contractor prepares a draft Performance Statement which is reviewed by the Field Representative and Construction Manager. Bid Check Estimating also reviews the performance statement if the value is greater than \$500,000. After the performance statement breakdown is agreed to by the Construction Manager and the Contractor, the Performance statement is forwarded to CECONY Contract Administration.
 - While the project is on-going, the CECONY Field Representative verifies and documents the construction work using standard forms including:
 - Daily log book/reports

⁶² DR 455-C Attachment 02 CONST-011

⁶³ Inspectors that are members of the bargaining unit.

⁶⁴ DR 455-C Attachment 03

⁶⁵ DR 168-C Attachment 22

⁶⁶ DR 184-O

- Field data forms
 - Report of street and/or sidewalk openings
 - Time and material sheets
 - Trucking tickets
 - CFORs.
- At the end of each pay period, the Contractor submits a draft copy of the performance statement to CECONY. The Field Representative and Construction Manager review and approve the performance statement, provide a copy back to the Contractor and provide it to Contract Administration along with completed field checklist.
 - The Contractor submits the approved performance statement and invoice to Contract Administration, which performs a technical review of the Performance Statement and invoice and creates a payment certificate, which is routed to the Construction Manager for approval.
 - Contract Administration obtains all signatures required by the Delegation of Authority.⁶⁷
- CECONY's Unit Price Contract Payment Processing Procedure governs all contract construction work performed using a unit price contract. The process is summarized as follows:
 - Following the completion of each layout, Field Inspectors verify the work performed, and create a Layout Payment Folder and associated checklist.
 - A Technical Reviewer in the Construction Business Services group reviews worksheet data and all pertinent documentation.
 - Following Contractor concurrence, the Construction Business Services staff prepares payment for processing.
 - The Construction Manager approves the payment.⁶⁸

12. O&R also has a sound process for verifying contractor payments, but its procedures are not well-defined.

- O&R tracks and manages contractor work using daily field reports, unit and time sheets and as-constructed drawings.⁶⁹
- The Electric Operations and Gas Operations field representatives complete field reports, including:
 - Daily Report – completed by an O&R Supervisor summarizing work performed, including the number of contractor employees, equipment used, and any overtime or extras allowed.
 - Unit Sheet – Tracks units installed each day. It is completed by the Contractor and signed by an O&R supervisor.

⁶⁷ DR 11-C Attachment 15

⁶⁸ DR 11-C Attachment 14

⁶⁹ DR 172-O

- Timesheet breakdown (Electric Operations) – an invoicing report that tracks unit sheets associated with an invoice. It details the personnel and equipment that worked the project and allows a comparison of the unit cost to what the work would have cost as Time and Equipment.
 - Tracking Sheet (Electric Operations) – Tracks unit sheets paid to ensure: 1) unit sheets are not invoiced more than once; 2) poles and units are not invoiced more than once; and, 3) accruals are proper prior to payment.⁷⁰
 - Construction Report (Gas Operations) – this report provides pressure test information as well as pipe footage, construction verification and as-constructed drawings.⁷¹
- Once work is complete and verified, the work is identified as complete in O&R's Oracle Enterprise Business System (EBS) and the contractor can invoice and be paid for any work performed.⁷²
 - The O&R Contractor payments are governed by *CM-1: Contract Management*. The procedure is not specific to construction contracts, and does not provide detailed guidance regarding specific roles and responsibilities and documentation required for invoice processing.⁷³

13. CECONY and O&R have adequate quality control and quality assurance programs.

- CECONY's Electric Operations Quality Assurance Group performs and maintains multiple programs regarding work quality within Electric Operations. NorthStar's detailed project reviews found that:
 - Activities include post-work inspections within two weeks of job completion, as well as work in progress inspections, unannounced (random) and announced (embedded) to determine procedural compliance.
 - All QA inspections are captured in the Electric Operations work management system and work found to be non-specification compliant results in a QA failure.⁷⁴
- An overview of CECONY's Electric Operations' five QA categories and associated programs is presented in **Exhibit VI-13**.

⁷⁰ DR 358-O

⁷¹ DR 358-O

⁷² DR 172-O

⁷³ DR 168-O

⁷⁴ DR 182

Exhibit VI-13
Overview of CECONY Electric Operations QA Programs

QA Category	Programs
1. Inspections – Performed by company forces and/or contractors.	• Underground Safety Inspections • Underground Residential Development Safety Inspections • Overhead Safety Inspections • Vegetation Management • Stray/Contact Voltage Testing • Overhead Pole Treatment Inspections
2. Equipment Checks – Performed by company forces and/or contractors to ensure the integrity of distribution transformers.	• Computerized Inspection of Network Distribution Equipment (CINDE) • 4kV Unit Substations
3. Work in Progress Inspections – Performed during QA’s embedment with a construction section.	• Overhead • Underground
4. System Construction Inspections – Performed by CECONY QA to determine specification compliance during field construction.	• Overhead specification compliance • Underground primary splicing • Underground secondary splicing
5. Service Connection Inspections – Performed by CECONY QA to assess specification compliance when making connections to customer equipment.	• End-line box connection • Overhead service connections • Energy Service final inspection (pilot program)

Source: DR 182-C Supplemental

- The five QA categories are monitored as part of Electric Operation’s Quality Index, a KPI established at a regional level for Electric Operations to track performance based on the quality of work performed by Electric Operations Construction.
 - Each category’s value is the percentage of QA inspections that were recorded as a pass (or in compliance) inspection for that category.
 - In order to achieve the KPI, Electric Operations is required to meet or exceed the percentage goal for at least 4 of the 5 categories, as well as the overall pass rate.
 - Performance updates are sent to Section Managers, General Managers, and Executives on a monthly basis.
- CECONY’s Gas Compliance and Quality Assessment Department was established in January 2015. The General Manager of the organization reports directly to the Senior Vice President.⁷⁵ The department’s mission statement is:
 - Support Gas Operations’ commitment to compliance, quality and safety by conducting assessments and inspections to promote continuous improvement.

⁷⁵ DR 343-C

- Assist in the development of employee skills by scheduling and tracking training requirements for Gas Operations.
- Provide guidance on compliance-related matters to employees in Gas Operations.⁷⁶
- The new Gas Compliance and Quality Assessment Department has three sections. Only one section, Gas Quality Control is a new organization:
 - Gas Quality Control (GQC) – Performs inspections of ongoing Gas Operations work to verify compliance with specifications, procedures, and regulations and reviews workmanship quality in the field. The initial focus is on capital work, and in particular, plastic fusion.
 - Gas Quality Assurance (GQA) – Conducts reviews and assessments of compliance-related work processes, procedures and documentation throughout Gas Operations and other related operating areas.
 - GQA has been in place for several years.
 - GQA responds to incidents that are reportable to the PSC and is the point of contact for requests by the PSC and other government agencies for information or documents from Gas Operations.
 - A new function of GQA is the “embedding” of several GQA employees in the Gas Operating Areas to provide GQA support and informal assessments. The initial focus of this new group is related to Gas Distribution Service (GDS) documentation.
 - GQA is also responsible for managing the Plastic Fusion Sampling Plan and the transition to the NGA’s Operator Qualification Program.
 - Gas Training & Employee Development – Schedules, coordinates, and tracks training for all employees in Gas Operations to assist employees in completing their required training. The group also tracks and manages employees’ progress through their career paths and assists with recruitment and onboarding of new employees for all of Gas Operations. A Gas Training group has been in place for many years, but had previously been part of Gas Quality Assurance and did not include Employee Development. With respect to employee training and development, a December 2015 review of CECONY’s current certification program found all personnel are currently certified for the work associated with their work class.⁷⁷ Additionally, NorthStar selected a sample of CECONY employees with certifications expiring in January 2016. CECONY demonstrated that the necessary certifications were renewed on time.⁷⁸
- CECONY’s Central Operations’ Construction Quality Assurance (CQA) is an independent organization that reports directly to the Vice President of Construction. CQA’s efforts cover Construction’s work activities, including work performed for

⁷⁶ DR 343-C

⁷⁷ DRs 120 and 632

⁷⁸ DRs 886 and 887

operating organizations (i.e. Electric, Gas, and Steam) and non-operating areas, such as Facilities.

- CQA conducts a broad and comprehensive program of work process reviews and field operation inspections.
- CQA uses a risk-based approach in developing the annual quality assurance plan and when conducting individual reviews. This approach uses the Enterprise Risk Management (ERM) process, Construction personnel surveys, Chief Executive Officer (CEO) focus areas, past experiences, and current events to define review topics.
- CQA monitors activities that are performed by both contractors and employees performing the work. The different types of CQA activities are described below:
 - Standard Review: A critical evaluation performed on a recurring basis with a pre-defined scope of work. Each standard contains a guidance document created to aid in the execution of the review.
 - Special Review: A critical evaluation of processes or events initiated by request or as needed.
 - Snapshot Review: A review typically conducted within 7 to 14 days that answers a specific question. It will provide the CQA Section Manager with confidences and concerns surrounding the specific question.
 - Field Observations: Random inspections of field activities performed to confirm adherence to safety and operating procedures.
 - Root Cause Analysis: Analysis of an event to identify why it occurred and the corrective action necessary to prevent reoccurrence.⁷⁹
- CQA also executes quality assurance reviews for Steam Operations, Substation Operations, and System and Transmission Operations.⁸⁰
- CECONY also has a cross-functional monthly Quality Assurance Managers meeting. This meeting provides an opportunity for individuals from across the organization to create awareness, share best practices, and promote the quality assurance discipline.⁸¹
- O&R's QA team reports to the Director of EH&S, who in turn reports directly to the President of O&R. The QA group performs reviews of the transmission and distribution electric and gas construction and engineering to ensure compliance with internal procedures as well as federal and state regulations. Reviews are also conducted to include applicable support/administrative areas as necessary.⁸²
- Gas QA reviews focus on work performed and compliance with internal procedures, Federal Code part 192, and State Codes part 255 to include Construction Activities and Program Management.

⁷⁹ DR 182-C Supplemental Attachment 2

⁸⁰ DR 182-C Supplemental Attachment 2

⁸¹ DR 182-C Supplemental Attachment 2

⁸² DR 316-O, DR 182-O

- Electric QA reviews are specific to compliance with internal procedures, National Electrical Safety Code (NESC), and state regulations specific to stray voltage program management.
- On average, O&R's QA Group conducts a total of 15-18 reviews each year. The group annually performs a risk assessment which includes information from:
 - The Corporate ERM Group's risk profile by commodity for O&R.
 - The history of findings from previous years.
 - Completed corrective items.

14. CECONY has a formal, controlled contract change order process.

- At CECONY, fixed price changes to lump sum contracts are governed by the Purchase Order Change Request/Authorization (POCR/A) process and tracked in the POCR/A system. The POCR/A system is a computer application used to authorize contract and change order payments and to track expenditures and status.⁸³
- CECONY's POCR/A process is as follows:
 - The CECONY Field Inspector prepares a Finding of Fact which describes the change, and an estimate of the cost of the change, and submits this information to the Contract Administrator.
 - Contractors submit an estimate of the change amount directly to the Contract Administrator.
 - The Bid Check group provides an estimate for all changes in excess of \$25,000.
 - If the contractor's estimate is within 10 percent of the company's estimate (the bid check estimate if the amount is over \$25,000), the Contract Administrator creates a modification to the existing order that gives the contractor authorization to proceed.
 - If the contractor's estimate is not within 10 percent of the company's estimate, or change in work scope cannot be fully defined, the work may proceed on a time and materials basis through a Purchase Order Change Authorization process which authorizes work to be performed in a certain time period for a not-to – exceed price.⁸⁴
- NorthStar's detailed project review found that POCR/As were appropriately issued and tracked for all fixed price contract work.

15. O&R has a formal change order process for large projects, but not for smaller projects that are not managed by the PMD.

- O&R's change order process for large or complex projects is described in the PMD Project Execution Manual:

⁸³ DR 11-C Attachment 15

⁸⁴ DR 168-C Attachment 9

- All significant change requests are submitted to the Project Manager using the Project Change Request Form. The form is used to approve a change that impacts project financials, schedules and resources.
 - The Project Manager evaluates the requested scope change. Upon acceptance of the scope change request, the Project Manager will submit the scope change request to the appropriate approver (project sponsor) for acceptance.
 - Upon approval of scope changes by the project sponsor, the Project Manager will update all project documents and communicate the scope change to all stakeholders. Based on feedback and input from the Project Manager and stakeholders, the project sponsor is responsible for the acceptance of the final project deliverables and project scope.
 - The Project Change Request process must be complete and approved prior to submitting the request for funding approval in Oracle.
 - All change orders are processed in Oracle in accordance with O&R's Delegation of Authorities and are tracked and archived in Oracle.⁸⁵
- NorthStar's project review found that Project Change Requests were used for larger O&R projects and that the requests are archived and tracked in Primavera Contract Manager and/or in Oracle iProcurement Change Order log.⁸⁶
 - O&R does not have detailed procedures for change orders on smaller projects. The O&R Contract Administration Manual states only "[w]hen it is necessary to modify or expand the scope of the work, including units, the funding level and/or the period of performance, the requesting organization will submit the appropriate request to Purchasing to change or modify a contract."⁸⁷
 - NorthStar's review of two fixed price contracts projects not managed by PMD found that the change order process varied from the informal (email) to the use of formal Extra Work Authorization forms. Changes were requisitioned and logged Oracle in iProcurement.⁸⁸

16. CECONY properly performs quarterly review of change orders to identify lessons learned. O&R does not perform change order reviews on a routine basis; however, it did perform a review in 2015 which led to improvements in its bid process.

- CECONY performs three change order reviews in the first three quarters of each year.
 - One review is led by Central Engineering and two reviews are led by Central Construction (responsible for the oversight of lump sum bid work).

⁸⁵ DR 846-O, DR 168-O Attachment 1

⁸⁶ DR 436-O and DR 439-O

⁸⁷ DR 168-O Attachment 1

⁸⁸ DR 434-O, DR 439-O Attachments 9 through 22 Confidential Responses

- There are specific criteria used to select the change orders for review. The criteria include customer impact, solution clarity, benefits, timeline, probability of implementation, and team availability.⁸⁹
- CECONY tracks and communicates the results of the change order review.
 - All corrective actions identified in the reviews performed by Central Engineering are entered and tracked in the Action Tracking System in order to incorporate these corrective actions into future Central Engineering work.⁹⁰
 - Central Construction's completed change order reviews are presented at the General Manager's Staff meetings with the organization's Construction Managers where discussions are held to determine what follow up actions may be needed to implement recommendations.⁹¹
 - The change order reviews are stored in a Construction share folder for reference and use on applicable projects in the future.⁹²
- O&R completed just one review of change orders during the audit period. In early 2015, O&R's PMD completed a review of change orders on large construction contracts with a significant numbers of change orders.
 - As a result of the review, bid documents were revised so that common out-of-scope change order items were either incorporated explicitly into lump sum bid items or broken out as specifically priced units within the contracts.
 - Change order causes were also incorporated into PMD's Lessons Learned database.⁹³

17. CECONY routinely tracks project costs. CECONY Central Operations' monthly project Current Working Estimate (CWE) is a useful report which provides project costs at sufficient detail to manage the project. While the other CECONY organizations review project costs, there are no standard project reports.

- All CECONY project management procedures require the Project Manager to maintain a CWE for each project, but only one procedure provides a definition of what CWE entails: The project management procedure for projects over \$10 million has a basic definition of the CWE, saying that it should contain "all current and projected costs to complete the project."⁹⁴
- There is no formal corporate procedure or guideline regarding the development of a CWE.⁹⁵

⁸⁹ DR 384-C Attachment 1

⁹⁰ DR 386-C

⁹¹ DR 386-C

⁹² DR 384-C

⁹³ DR 235-O, DR 235-O, Attachment 1

⁹⁴ DR 168- Attachments 1, 2, 4, and 5

⁹⁵ DR 696-C

- Central Operations has the most structured CWE format. The standard template is updated monthly by a Cost Analyst within Business Finance, based on information provided by the project/program managers and Oracle.⁹⁶
- With the exception of its treatment of engineering costs, as discussed in Conclusion 18, Central Operation’s CWE is a useful cost monitoring tool, that:
 - Provides appropriated and actual costs at an appropriate level.
 - Tracks variances
 - Has recently been updated to track change order amounts.
- NorthStar’s detailed project review found that except for Public Improvement, the Central Operations organizations used CWEs on all projects. Other CECONY organizations use various methods to provide monthly cost updates, as summarized in Exhibit VI-14.

Exhibit VI-14
NorthStar Project Review
Monthly Project Cost Updates Other than CWEs

Functional Area	NorthStar’s Detailed Project Review	Program	Cost (\$M) [Note]	What Used instead
Central Operations - Public Improvement	Water Mains	None	\$6.1	Cash flow report -- shows expenditures to date, and monthly forecasts (termed CWE) vs. authorization and annual budget.
Electric Operations	200 Baychester Ave	New Business	\$2.0	“50% Report”- A report produced by Cost Management that lists financial status for all current projects for the New Business Program in Bronx-Westchester.
Electric Operations	Overhead Storm Hardening - Bronx Westchester	Overhead Strom Hardening	\$21.4	BW Major Job Appropriations – shows appropriated amount vs. expenditures to date by layout
Gas Operations	Medium Cast Iron Replacement Program	Medium Cast Iron Replacement Program	\$1.5	None. It was a short duration.
Gas Operations	Leak Prone Pipes W. 18th	Leak Prone Pipe Replacement	\$0.6 appropriation.	Cost by Cost Element printouts
Gas Operations/ Public Improvement	Oil to Gas Conversion	Oil to Gas Conversion	\$1.1	CECONY did not provide a monthly project cost report for NorthStar review

Note: Cost data from the most recent Current Working Estimate (CECONY)
 Source: DRs 411, 418, 421, 433, 414 and all other project review documents.

- NorthStar’s project review found O&R uses the Cost Variance Report (described in Conclusion VI-19) as its primary project cost report.

⁹⁶ DR 696-C

18. CWEs and other CECONY cost reports do not reflect actual costs because CECONY allocates, rather than directly charges, engineering and certain other costs to all active capital projects. O&R direct charges.

- CECONY allocates many costs that should be charged directly to specific capital projects, including:
 - Engineering costs
 - Construction Management's oversight of unit price contractors
 - Public Improvement's inspection of City work.⁹⁷
- Central Construction's oversight of fixed price contractors is directly charged to the project.⁹⁸
- CECONY argues that it is generally not practical or cost effective to directly track the engineering and construction management costs associated with each project. Therefore, the labor and non-labor costs for these services are initially charged to clearing accounts and subsequently allocated to capital or O&M accounts.⁹⁹
- CECONY determines the allocation between capital and O&M based on time studies.
 - The Business Finance Organization coordinates annual time studies for Electric Operation's and Gas Operation's engineering departments. Usually, these 10-day time studies are performed during the month of April. According to CECONY, April closely represents the scope of work done throughout the year.¹⁰⁰
 - Central Engineering establishes its capital allocation percentage based on a three-year average time study using first quarter data.¹⁰¹
 - Construction Management performs an annual time study based on an analysis of contracts administered for the prior year and a review of potential future work.¹⁰²
- The allocation of engineering and construction management capital costs to specific projects is based on each project's monthly direct costs via allocation rules in Oracle.
- O&R engineering does not use clearing accounts. Engineers charge their time through WMS directly to each capital project's account number or to the corresponding O&M account number for the work performed.¹⁰³

⁹⁷ IR 217

⁹⁸ IR 217

⁹⁹ DR 814-C Attachments 2, 3 and 4

¹⁰⁰ DR 815-C

¹⁰¹ DR 814-C Attachment 3

¹⁰² DR 814-C Attachment 4

¹⁰³ DR 704-O, DR 704-C Attachment 1

19. O&R tracks monthly costs using a company-wide Cost Variance Report that lists all projects by responsible department. This report does not provide sufficient detail to manage projects and requires a separate effort to investigate the details of project variances.

- O&R prepares a monthly Cost Variance Report for all capital expenditures.¹⁰⁴
- O&R's Cost Variance Report includes all O&R programs and projects. The Cost Variance Report contains a summary page that lists all projects by responsible department, with at least one line of information for each project, which includes:
 - Annual Budget – authorized, projected, and variance.
 - Monthly Budget – year-to-date actual, year-to-date budget and year-to-date variance.
 - Total Project Budget – total project actuals, total authorization, total appropriations, and percent of appropriation spent.¹⁰⁵
- O&R Financial Services (Finance) is responsible for updating the Cost Variance Report on a monthly basis. Upon completion of the monthly Cost Variance Report, Finance identifies the main drivers of the actual year-to-date (YTD) variance and asks the relevant departments to provide variance explanations for those individual projects.¹⁰⁶
- In NorthStar's project review, O&R provided the Cost Variance Report as demonstration that project costs are tracked and reported. The project review found that each of the projects reviewed was at least one line item in the monthly Cost Variance Report.¹⁰⁷ However, it is our assessment that a few lines concerning high level cost variances do not provide adequate cost data to manage the project.
- The O&R PMD Cost Analyst uses Oracle Business Intelligence (BI) and the O&R's Capital Variance Report to monitor and identify variances and to verify project expenditures are within authorized and appropriated levels.
 - The Cost Analyst investigates variances using reports within Oracle Business Intelligence, including the Monthly Close Reporting – Cost Management Report that shows actuals by expenditure category and type.
 - The Cost Analysts provides information to the Project and Department Manager(s) for review.
 - As necessary, a Cost Analyst may provide additional support and analysis for the Project or Department Manager based on the specifics of the project using Oracle BI Monthly Close Reporting – Cost Management Report.¹⁰⁸

¹⁰⁴ DR 612-O Confidential Response

¹⁰⁵ DR 612-O Confidential Response

¹⁰⁶ DR 673-O

¹⁰⁷ DRs 433 to 439

¹⁰⁸ DR 356-O

20. O&R's PMD is the only organization that routinely prepares formal monthly Project Status Reports that address project cost and schedule. The other CECONY and O&R organizations report program and project metrics in various reports.

- O&R's PMD prepares monthly Project Status Reports. These standard reports provide a comprehensive summary of project status:
 - Dashboard for Budget, Schedule, and Living Budget (updated annual capital spending forecast through the end of the fiscal period)
 - Scope
 - Project Status (Work Performed)
 - Schedule
 - 30 or 60-Day Look Ahead of Activities
 - Procurement Status
 - Risks and Issues
 - Project Financial Progress Report, including estimates, appropriations, and current year earned value
 - Key Milestone Dates and Percent Complete.¹⁰⁹
- CECONY Electric Operations, Gas Operations, and Central Operations prepare program and project reports to Budget Governance Committees, upper management, external stakeholders, and project team, but reports differ between organizations.
 - In Electric Operations performance metrics are compiled in project progress reports given to the Budget Governance Committees, upper management, external stakeholders, and project team. The most common metrics used on projects are listed below

Performance/Scheduling Metrics:

- Total actual units of work completed vs. total number of units needed for the project.
- YTD actual units of work completed vs. YTD goal for units of work completed.
- YTD actual units of work completed vs. year-end goal for units of work completed.
- Monthly actual units of work completed vs. monthly goal for units of work completed.
- Actual time taken (to date) for the project vs. baseline time goal for the project (to date).
- Actual time of project task vs. baseline time for project task.

Budgeting Metrics

- Current working estimate of the project vs. the total forecasted budget of the project.
- YTD actual spend vs. YTD forecasted spend.

¹⁰⁹ DR 401-O

- YTD actual spend vs. year-end goal for spend.
- Monthly actual spend vs. monthly goal for spend.
- Gas Operations routine reports include:
 - Monthly capital reports for project and programs prepared by the Cost Management Group using Project One Business Intelligence.
 - Monthly productivity reports showing units and expenditures by the function of work.
 - Other reports include the Weekly Status Updates, monthly productivity reports and Trends Books. These reports provide an overall snapshot of the status of capital programs and projects.
- Central Operations reports include:
 - Monthly forecasts for Governance Committees – Used to determine project performance and make decisions to manage the portfolio.
 - Bi-weekly review of schedule data in Substation Operations.
 - Monthly reviews of deliverables report for Substation Operations – Used to communicate and refine and ratify the plan for key project deliverables.
 - Reports for Quarterly Meetings with Senior VP – Provide overall snapshot of status of Capital Programs vs. Plan and highlight decisions that are authorized at the executive level.¹¹⁰

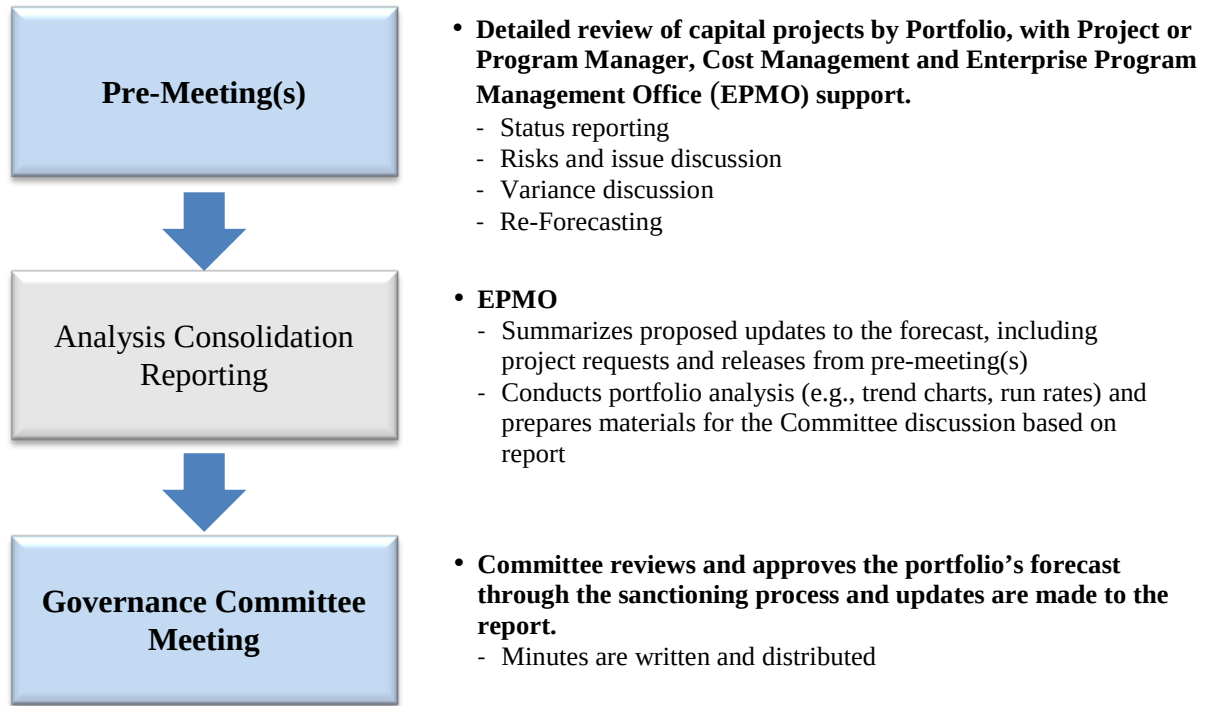
21. CECONY management appropriately reviews program and project costs in the monthly governance committee meetings.

- CECONY recently established governance committees for its gas, electric and steam operations.
 - Gas Governance Committee – started April 2014
 - Electric Governance Committee – started September 2014
 - Steam Governance Committee – started March 2015.¹¹¹
- The governance committees conduct formal monthly reviews of capital programs and programs. An overview of the process is shown in **Exhibit VI-15**.

¹¹⁰ DR 332-C

¹¹¹ DR 280-B

Exhibit VI-15 Overview of CECONY Governance Process



Source: DR 280-B Attachment 1.

- In addition to the governance committee meetings, the Senior VP of Central Operations has a quarterly meeting to review the status of capital programs, and the VP of Substations holds a monthly meeting to review O&M and capital budget variances, staffing, and overtime rates.¹¹²

22. O&R has a sound process for reviewing program and project costs and status which includes monthly Capital Budget Policy Committee (CBPC) meetings for all programs/projects and a monthly Project Status meeting to review PMD projects. The CBPC process will be replaced by the Governance Committee Process in 2016.

- O&R's Cost Variance Report is reviewed and discussed in the monthly CBPC meeting.¹¹³ During the CBPC meeting, each department is required to explain its variance in total, and whether or not (and how if applicable), it will meet its forecast.¹¹⁴

¹¹² DR 406-C Attachment 1

¹¹³ DR 29-O

¹¹⁴ DR 845-O

- NorthStar’s review of CBPC meeting minutes shows that although each project is not discussed at every meeting, there is a discussion of projects with significant variances.¹¹⁵
- In 2016, the CBPC meeting is being replaced with the governance committee process. The detailed discussion of project variances will be addressed in the “pre-meeting” component of the Governance Committee process shown in **Exhibit VI-15**. The Governance Committee process is also described further in Chapter IV – System Planning and Chapter V – Capital and O&M Budgeting.
- In addition to the monthly CBPC meeting, the O&R VP of Operations holds a monthly Project Status meeting and reviews the monthly project status reports for projects managed by PMD.

23. CECONY does not have an effective process to transfer project management responsibilities to Construction Public Improvement when work is transferred to a NYC contractor. Additionally, Construction Public Improvement does not have processes in place to manage projects. Unlike CECONY, O&R has no requirement to transfer work to outside contractors due to municipal jurisdictional practices and does not have a Public Improvement organization.

- CECONY’s Central Operations Construction Public Improvement Group coordinates, directs and oversees all municipal project interference related work in the service territory.¹¹⁶
- One of the projects in NorthStar’s detailed project review entailed the transfer of project management responsibilities from Gas Operations to the Construction Public Improvement Group.
 - The common practice in the industry is that a contractor with a permit to perform City public work has jurisdiction in an area.¹¹⁷
 - The Gas Main and Service Installation project for 660 Fort Washington Ave was initially managed by Gas Operations.¹¹⁸
 - When a city contractor mobilized under its permit, Public Improvement took the responsibility from Construction Management to excavate a trench, support gas operations crews and provide final restoration.¹¹⁹
 - Public Improvement Field Inspectors were responsible for the oversight of the city contractor.¹²⁰
- The focus of the Construction Public Improvement group is inspections, rather than project management.

¹¹⁵ DR 272-O

¹¹⁶ DR 1-B Supp2 Attachment 2

¹¹⁷ DR 712-C

¹¹⁸ DR 713-C

¹¹⁹ DR 713-C

¹²⁰ DR 713-C

- The Construction Public Improvement Interference Control manual does not address project management.
- It provides guidance for engineering, planning, construction inspection and control processes.¹²¹
- There was no formal transfer of responsibilities from Construction Management to Public Improvement.
 - When the city contractor mobilized under its permit, Public Improvement took the responsibility from Construction Management to excavate a trench, support gas operations crews and provide final restoration.
 - All communications for the transfer of responsibility were verbal.¹²²
 - There was no assigned Public Improvement project manager.¹²³
- The final project cost provided to NorthStar in the detailed project review had many contractor costs that were posted after the work had been completed.¹²⁴ There were \$153,000 in charges that were corrected following our review.¹²⁵

24. CECONY and O&R have project management procedures which are similar, but not identical. O&R has no procedures for projects not managed by PMD.

- CECONY and O&R have five different procedures which govern project management activities. The procedure used depends on the organization and size of the project. Each project management procedure has a different definition of something as fundamental as a “project.”

**Exhibit VI-16
CECONY and O&R Project Management Procedures**

Organization	Procedure No./Date Issued	Title	Definition of a “Project” [Note 1]
CECONY Central Operations	COP 10-0-5 May 2014	Project Management	Work requiring engineering support that cannot be resolved through field or system engineering and results in a modification to a system, structure or component that typically requires multiple technical disciplines or work groups to complete.
CECONY – Any Project with Total Project Estimate >\$10M	CI-292-2 Dec 2014	Project Management Process	A project is defined as any undertaking that has all the elements and characteristics listed below. • A defined scope of work with a beginning and end date. • Scope of work that involves construction or a

¹²¹ DR 828-C Attachment 1

¹²² DR 827-C

¹²³ DR 414 Supplement Attachment 1

¹²⁴ DR 414-C Attachment 12

¹²⁵ DR 715-C Attachment 4

Organization	Procedure No./Date Issued	Title	Definition of a “Project” [Note 1]
			modification to the electric, gas, or steam systems or Company facilities. • Engineering analysis and design work. • Procurement of materials and equipment related to the scope of work.
CECONY – Electric Operations	EOP-5028 April 2010	Project Management	Work requiring engineering support that cannot be resolved in a field organization and results in a modification to a system, structure or component that typically costs over \$5 million and requires the support of multiple organizations to complete. Project Managers may also be assigned to oversee work that costs less than \$5 million if it is sensitive or warrants high level attention.
CECONY – Gas Operations	G-8214-0 March 2007	Gas Operations Project Management	Work requiring engineering support that cannot be resolved in a field organization and results in a modification to a system, structure or component that typically costs over \$100,000 and requires the support of multiple organizations to complete.
O&R - Large or Complex Project	PM-1 March 2015	Project Execution Manual	Work that has a specific scope and defined time period for execution. Projects are generally defined with a single scope (i.e. permit, design, and construction) and may be composed of multiple related sub-projects (e.g. substation, transmission and distribution).

Note 1: The CECONY Capital Budget Procedure has another similar, yet different definition of “project,” as cited on page 1 of this chapter.

Source: DR 168-C, DR 168-O, NorthStar Analysis.

- The five project management procedures also refer to the project lifecycle differently. As shown in **Exhibit VI-17**, O&R’s procedure uses the process groups identified in the PMI’s Project Management Body of Knowledge (PMBOK).

Exhibit VI-17 CECONY and O&R Project Lifecycle Terminology

CECONY Electric Operations Gas Operations Central Operations	CECONY Large Projects	O&R Large Projects	PMBOK Process Groupings
Project Initiation	Project Initiation	Project Initiation	Project Initiation
Project Scope and Funding		Planning	Planning
Engineering Design	Engineering Phase	Executing	Executing
Construction	Construction and Commissioning	Monitoring and Controlling	Monitoring and Controlling
Project Close-Out	Project Close-Out	Project Close-Out	Closing

Source: DR 168-C, DR 168-O, and Project Management Body of Knowledge, Third Edition.

- While the procedure nomenclature is not important in and of itself, some key elements of project responsibilities are not addressed in each procedure, or are addressed differently. For example:
 - CECONY Corporate Instruction CI-292-2, project management for projects over \$10 million, does not assign responsibility for the procurement of long lead time items or construction contracts.¹²⁶
 - O&R's large project procedure does not address funding.¹²⁷
 - The CECONY Gas Operations procedure does not specify the need for a constructability review.¹²⁸
- O&R does not have documented criteria regarding when projects are managed by the Project Management organization.
 - At O&R, the type of projects assigned to PMD is a corporate practice, not formally articulated in a policy or procedure.¹²⁹
 - There are generally three project types that are assigned to PMD: 1) a total project value of \$5 million dollars or greater, (2) projects deemed by executive management to be of high strategic value, (3) projects that support the development and efficiency of the PMD.¹³⁰

25. Both CECONY and O&R have assigned individuals with responsibility for program management; however, there are no procedures or guidelines regarding program management responsibilities.

- All CECONY and O&R programs have program owners.¹³¹
- There are no procedures describing the responsibilities of program owners.¹³²
- An overview of the number of programs and program owners in each organization is shown in **Exhibit VI-18**.

¹²⁶ DR 168-C

¹²⁷ DR 168-O

¹²⁸ DR 168-O

¹²⁹ DR 395

¹³⁰ DR 396-O

¹³¹ DR 732-C, DR 732- O

¹³² DR 818-O and DR 818-C Confidential Responses

Exhibit VI-18
Overview of CECONY Programs and Program Owners

Organization	Number of Programs	Number of Program Owners
Electric Distribution		
Brooklyn & Queens Electric Ops	6	2
Bronx & Westchester Electric Construction - Non-Network	4	1
Bronx & Westchester Control Center	2	1
Bronx & Westchester Electric Construction - Network	3	1
Distribution Engineering	4	2
Manhattan Project Management	3	1
Manhattan Electric Construction	5	1
Public Improvement	1	1
Regional Engineering	6	1
Staten Island Operations	3	1
Electric Distribution	37	12
Gas Operations		
Gas Engineering	9	3
Gas Meter Shop	4	1
Construction Support Services	2	1
Westchester Eastview Construction	1	1
Gas Conversion Group	4	1
Gas Operations	20	7
System & Transmission Operations		
Transmission Operations	6	4
System & Transmission Operations	6	4
Substation Operations		
Asset Management	1	1
Protective System and Testing Tech Apps	1	1
Substation Operations Planning	25	15
Transformer Group	1	1
Substation Operations	28	18
Steam Operations		
Electric Production	12	1
Steam Production	6	3
Substation Operations	18	4
Grand Total	109	45

Source: DR 731-C Attachment 1; NorthStar Analysis.

Overview of O&R Programs and Program Owners

Organization	Number of Programs	Number of Program Owners
Electric Operations and Engineering		
Contractor Administration Group	1	1
Electric Operations	3	4
Transmission and Substation Engineering	2	2
Distribution Engineering	2	1
O&R Electric Operations and Engineering	8	8
O&R Gas Operations and Engineering		
Contractor Administration Group	2	1
Gas Construction	1	1
Gas Engineering	7	2
O&R Gas Operations and Engineering	10	4
Grand Total	18	12

Source: DR 731-O; NorthStar Analysis.

- CECONY's Substation Operations Planning group has the greatest number of programs and program owners. This organization has a dedicated group of planning analysts responsible for program management.
- O&R does not have dedicated "Program Owners." The individuals with program management responsibility have other titles and the management of the capital program is included within the other responsibilities of that title.¹³³

26. CECONY identified improvement opportunities in its Gas Operations project management and established a Gas Program and Project Management Organization in 2015.

- In May 2105, CECONY Gas Operation established a Project and Program Management Organization (PMO), and its Project Managers will start to manage jobs in 2016.¹³⁴
- As described in the Gas Operations PMO Charter, current deficiencies in Gas Operations approach to project management include:
 - Capital project management is performed independently by departments using various methodologies achieving inconsistent levels of effectiveness.
 - Currently, there are varying levels of scheduling, estimating, and risk management systems which are all independent and manually maintained. There is a need for a structured project-based approach which will integrate these systems, while reducing redundancy. There is a need for a department-level master schedule that coordinates with the individual project schedules.

¹³³ DR 818-O

¹³⁴ DR 785-C Attachment 1

- Cash flow management and the accrual process are inconsistent and often fail to produce accurate forecasts.
 - The current project controls tools are not fully synchronized to meet the reporting needs of the company.
 - There is very little transparency in the capital project portfolio or operating organization's program portfolio, making it challenging to manage resources across all projects.¹³⁵
- The new Gas Operations PMO organization will be responsible for transmission and regulating stations, storm hardening and distribution programs.
 - Gas Operations PMO initiatives completed in 2015 include:
 - Developing a system for prioritizing projects prior to construction.
 - Producing and maintaining Primavera P6 schedules for major programs and projects scheduling. (The Gas PMO will assume responsibility for major project gas scheduling which is currently performed in Central Operations.)
 - Creating automated reports, such as Project Summary Reports.
 - Additional initiatives include:
 - Adding cost tracking to Primavera P6
 - Resource tracking across project portfolio
 - Creating a process for managing Distribution programs.
 - The Gas Operations PMO plans to leverage processes and tools already implemented across the organization including O&R's PMD.¹³⁶

27. CECONY and O&R have taken initial steps towards a more consistent approach to project management throughout the organizations. With the exception of CECONY Electric Operations, O&R and CECONY organizations have recently implemented, or are in the process implementing Primavera P6 as the scheduling tool and other Primavera project management tools.

- In 2010, the Business Improvement Section of CECONY's Business Finance Department established an Enterprise Program Management Office (EPMO). EPMO recently instituted the enterprise-wide capital portfolio optimization process discussed in Chapter V – Capital and O&M Budgeting. On the project management side, the EPMO has a vision to develop standard enterprise-wide project management tools and methodologies including:
 - Schedule Management
 - Resource Assignments
 - Detailed Cost/Benefit Estimating
 - Scope and Schedule Delivery.¹³⁷

¹³⁵ DR 693-C Attachment 1

¹³⁶ DR 693-C Attachment 4

- The EPMO, with the assistance of an external consultant (Burns & McDonnell), has begun to work with both CECONY and O&R to improve their project management and implement various components of Oracle Primavera.¹³⁸
- O&R's PMD is currently the only organization that uses the Primavera project management software suite. The status of Primavera implementation in other organizations is as follows:
 - O&R Project Controls (part of PMD) uses Oracle-Primavera as the system/tool for scheduling, documentation management and subsequent reporting. Primavera P6 is used for project scheduling, Primavera Contract Management is used for documentation management and Primavera BI Publisher and P6 are used for project reporting.¹³⁹ O&R employs a standard WBS.¹⁴⁰
 - O&R Electric Operations and Gas Operations have recently begun to use Primavera P6 to schedule crews, and plan to implement Primavera P6 to develop project schedules in 2016.
 - CECONY Central Operations has implemented Primavera P6 with a focus on the Engineering Phase of projects. As part of this effort, the key deliverables for engineering have been identified, and the data dictionaries in Primavera P6 have been established in order to schedule and monitor these key deliverables. These deliverables are essentially Work Packages. Reports have been developed to facilitate tracking at this level across the portfolio.¹⁴¹
 - CECONY Gas Operations is currently implementing Primavera P6. As part of this process, Gas Operations developed a standardized WBS which will be used for all projects from 2016 forward.¹⁴²
 - CECONY Central Engineering and Substation Operations Planning are currently working to develop project management processes to leverage Primavera.¹⁴³
- CECONY Electric Operations does not have a current effort to improve its project management processes. According to CECONY, it will be evaluating the need in 2016, and will leverage the work and output from Gas and Central Operations during the evaluation.¹⁴⁴
- EPMO has not established a schedule for an overall project management improvement effort.¹⁴⁵

¹³⁷ DR 694-C Attachment 1

¹³⁸ DR 694-C

¹³⁹ DR 355-O

¹⁴⁰ DR 355-O

¹⁴¹ DR 694-C

¹⁴² DR 694-C

¹⁴³ DR 694-C

¹⁴⁴ DR 694-C

¹⁴⁵ DR 892-C

D. RECOMMENDATIONS

1. Develop a consistent approach to program and project management throughout CECONY and O&R. Establish and enforce formal project management control procedures, especially regarding instances when CECONY capital projects are transferred between organizations. Establish an organizational unit responsible for standardizing project management practices to accomplish this effort. In addition to the scope identified to date, this effort should:
 - Develop formal, controlled procedures that address:
 - Project management for all projects, both large and small
 - Program management and the responsibilities of program owners
 - Contract change orders and contractor payment verification and processing
 - Development of project estimates, including the determination of contingency amounts.
 - Development of guidelines for the establishment of project schedules and the reporting of progress relative to the schedule.
 - Project Status reporting requirements.
 - Develop consistent reporting for programs and projects across the organizations.
 - Incorporate a WBS in the development of project/program estimates. Effective cost management begins with estimates that are based on a logical delineation of the project's key components. The WBS provides the structure for estimating and tracking the project cost.
 - Standardize monthly CWE reports throughout the organizations and the CWEs to the projects' WBS.
2. Charge actual CECONY engineering and construction oversight costs directly to capital projects so the booked capital costs reflect the actual costs of the project.
3. Revise CECONY processes and procedures to require that estimated and booked project costs include all costs.
4. Update CECONY contracting and procurement procedures to assign roles and responsibilities in the event that Bid Check estimate is the low bid.
5. Establish a process to ensure that there is a CECONY Project Manager assigned to manage the work when a CECONY project is performed by NYC contractors.
6. Formalize the O&R contractor oversight rotation policy and revise O&R contract management procedures to provide more detailed guidance regarding the use of the Contractor Oversight System.
7. Perform a formal review of O&R change orders on a semi-annual basis to identify and distribute lessons learned.

VII. WORK MANAGEMENT

This chapter focuses on construction and maintenance planning, scheduling, monitoring and improvement of day-to-day activities. The concept of work management applies to the execution of projects within a program; as well as to on-going maintenance and inspection activities.

A. BACKGROUND

Work management may be defined as the application of information systems and management processes which focus on increasing the performance of the work force. Elements of work management include the following:

- **Work Definition** – The quantitative definition of the work to be performed with reasonable time standards or expectations of the duration of the activities to be completed. These time standards or expected durations provide targets which can be used to measure the productivity of an individual worker, a crew or an entire work force.
- **Resource Planning** – The quantitative determination of the number, composition and timing of the resources (e.g., labor, materials, equipment) needed to accomplish the forecasted workload.
- **Work Planning and Scheduling** – The prioritization of work and the sequencing of all resources to minimize cost and management issues while meeting deadlines and maintaining required service levels. While resource planning will identify changes to the manpower level based on forecasted workload, the purpose of work planning and scheduling is to efficiently allocate the resources to respond to the existing workload.
- **Measurement and Control** – The comparison of the actual quantity of labor hours and other resources expended in completing a task or project to the quantity that was expected. Work measurement is useful to managers when evaluating the performance of individual workers, crews or an entire work force. Measurement and control is most important for identifying potential problems through performance reporting, initiating corrective actions when necessary, and appropriate follow-up mechanisms for assessing the impact of corrective actions taken. To be effective, work measurement and control requires detailed reporting of all labor hours expended, including travel, site preparation, delays, rework and other activities aside from direct work tasks and activities. Measurement must be based on comparing the actual resources required (e.g., labor, materials) to the planned or targeted amount.
- **Methods Improvement** – The evaluation of current practices, focusing on opportunities for better performance. The objective is to find ways to accomplish the same amount of work more efficiently and effectively. Methods improvement requires a common sense, step-by-step analysis of the work in order to improve

processes and procedures for doing the work. It usually results in eliminating unnecessary or unproductive resource expenditures and/or streamlining the remaining work.

A work management system provides a means of collecting and storing the information needed to define the work to be performed, to schedule and manage the work, to measure the performance of individual workers and crews, and to generate reports on the status of work and to evaluate productivity. The overall goal of a work management program is to improve operating procedures and to provide a means to balance manpower and other resources with the amount of work that must be accomplished. Effective work management provides a number of positive benefits:

- Work planning improves efficiency and effectiveness in the use of human resources. The utility is better able to align its workload with available resources and determine the optimum work force for each area or function, often translating into reductions in labor costs.
 - Employee utilization is improved because managers have the tools to monitor and direct resource distribution depending on the workload.
 - Efficiency is improved by getting more work or higher quality work done with the same number of people.
 - Effectiveness is improved by focusing available work-hours on higher priority tasks and delaying or eliminating less important or unnecessary work.
- Work management supports the budgeting process by identifying the workload requirements for planned activities. Work management also assists in the determination of the time frame for activities consistent with the utility's ability to finance the work.
- Benchmark and trend data developed from consistent reporting also gives management the information needed to negotiate with its union to define better work rules.

As described in Chapter VI – Program and Project Planning and Management, three primary organizations are responsible for the performance of CECONY's capital and O&M work: Central Operations, Electric Operations, and Gas Operations. At O&R, the primary organizations are Gas Operations, Gas Engineering, Electrical Operations, Electrical Engineering, and Substation Operations.

These organizations are responsible for both specific projects and on-going activities such as maintenance and inspections. Both projects and on-going maintenance work are constrained by limited resources, and should be well-planned, executed, and controlled using work management practices.

Historical O&M expenditures by responsible organization are shown in **Exhibits VII-1** and **VII-2**.

Exhibit VII-1
CECONY O&M Expenditures by Responsible Organization
(\$ in Thousands)

	2012	2013	2014
Central Operations			
Steam	\$ 120,518	\$ 117,580	\$ 116,960
Substations	93,833	84,742	85,992
System & Transmission	50,446	48,190	49,492
Construction	4,239	5,215	6,050
Senior VP & Staff	536	547	494
Central Engineering	7,023	6,837	6,282
Total Central Operations	\$ 276,595	\$ 263,110	\$ 265,270
Electric Operations			
Electric Operations	\$ 278,722	\$ 288,425	\$ 279,103
Gas Operations			
Gas Operations	\$ 82,278	\$ 83,465	\$ 112,573
Total	\$ 637,595	\$ 635,000	\$ 656,946

Source: DR 163-C Attachment 1.

Exhibit VII-2
O&R O&M Expenditures by Responsible Organization
(\$ in Thousands)

	2012	2013	2014
Gas Operations	\$ 16,134	\$ 16,840	\$ 16,926
Gas Engineering	2,039	4,562	4,204
Electric Operations	36,047	31,684	31,576
Electrical Engineering	5,797	4,949	4,608
Substation Operations	4,541	5,883	5,396
Control Center Operations	6,274	4,909	5,970
Project Management	567	372	394
Project Management OPS			785
Systems Support			38
Cost Management/Performance			
Total	\$ 71,400	\$ 69,199	\$ 69,896

Source: DR 163-O Attachments 1 to 3.

B. EVALUATIVE CRITERIA

The evaluative criteria were taken from the final work plan and include both the Staff's evaluative criteria from the RFP and those added by NorthStar.

- Do CECONY and O&R employ appropriate work management systems to schedule crews, transportation, equipment and materials? Do the companies use the work

management systems efficiently and effectively to manage capital projects and maintenance work?

- Do CECONY and O&R use work management systems and processes to identify trends in workload levels, productivity, utilization and service levels?
- Do CECONY and O&R effectively use data obtained from the work management systems for short- and long-term planning?
- Does the WMS have appropriate interfaces with other information systems (i.e., Supervisory Control and Data Acquisition (SCADA), outage management system (OMS) and Project One?
- Do CECONY and O&R use work management systems and processes to improve work performance and processes?
- Do CECONY and O&R have adequate systems and procedures in place to provide pertinent historic data for analyzing work volumes and staffing levels?
- Are there areas in which electric, gas and/or steam employees can be cross-trained so the workload can be shared and performed more efficiently.
- Do excess work backlogs exist, and if so, are there plans to eliminate them?
- Do CECONY and O&R make effective use of overtime?

C. FINDINGS AND CONCLUSIONS

1. With the exception of CECONY Gas Operations, CECONY and O&R organizations have improved their work management systems and processes in the past few years.

- CECONY Electric Operations established a new work management resource organization and implemented a new work management system, Logica-ARM, in 2014.
- CECONY Central Operations - Substation Operations, System and Transmission Operations, Steam Plants, and Construction Services have implemented systems to increase the functionality of Maximo, their primary work management system.
- Central Operations – Steam Distribution is in the process of moving from Steam Operating Mapping and Information System to a new Job Tracking System.
- O&R continues to add functionality to its work management system (WMS) through system additions and improvements.

2. CECONY Gas Operations' current work management program is inadequate.

- CECONY's Gas Operations department does not have an all-inclusive work management system. As summarized in **Exhibit VII-3**, the department has many systems and manual/paper processes that are used for the maintenance, construction, and inspections of gas distribution work and assets.

Exhibit VII-3
Gas Operations Work Management Systems

Acronym	System	Description
LOT	Construction Layout Tracking System	Tracks gas and electric construction capital design work performed by Construction Management's contractors.
COMPASS	Construction Management Payment and Support System	For contractor payments. Interfaces with ORACLE procurement and finance system.
ECS	Emergency Control System	Collects information associated with asset types and units. Developed in 1980.
GOPS	Gas Operations Performance System	Tracks hours worked by account for work performed by employees and per diem contractors against a gas work ticket. Mainframe system, with interface to the corporate HR/Payroll system (PeopleSoft™).
	Mobile Up and Mobile Field	For gas leak response by Gas Distribution Service mechanics Leak information is created and electronically dispatched to mobile devices in the trucks. The application receives emergency work through the Customer Information System (CIS) and the ECS system, which is then dispatched through Mobile Field.
GIS	Gas Inspection System	Tracks and manages all distribution inspection-related work, including inspections of leaks, assets such as meters, corrosion protection, remote operated high pressure valves, and public buildings of assembly. Sends planned work for Gas Distribution Service mechanics and Corrosion mechanics to mobile dispatch.
CPMS	Customer Project Management System	Case management of new business and interfaces to GIS for new meters to be added to the inspection cycle. Tracks and manages work from original request to meter turn on for new business and gas conversion requests.
	Gas Layout Tracker	Database and work tracking tool. Tracks layouts (work packages) from start to finish.
	Manual Processes	Gas Operations relies on manual processes to update the corporate property system and to manage inspections and maintenance of assets such as regulator stations, medium pressure valves, and leak surveys.

Source: DR 186-C, DR 907-C.

- In all, 67 systems are used to support Gas Operations' work activities. While some of these applications remain operable, they are not upgradeable, and are approaching obsolescence. These applications are also unable to provide the level of real time

visibility between departments, nor are they integrated in the manner required to effectively manage all aspects of work in Gas Operations.¹

3. CECONY has determined that Gas Operations' current work management is inadequate, and is taking steps to improve its work management systems and processes.

- In 2012, Gas Operations identified the need for an integrated work management system and performed a six month assessment. The study recommended:
 - Standardized processes
 - Creation of a forecasting, planning and scheduling organization
 - Deployment of the CGI-Logica Asset & Resource Management (Logica-ARM) product suite as its work management system.² Electric Operations recently implemented Logic-ARM, as discussed in Conclusion 6.
- Gas Operation management did not continue to pursue this effort after the initial "Phase 0" assessment.
- In 2014, Gas Operations established a Work and Resource Planning section, and began to standardize work processes across Gas Operations.
- In 2014, Gas Operations also developed Gas Layout Tracker as an interim database and work tracking tool until a new work management system is implemented or enhancements to current systems are completed. Gas Layout Tracker is an Access database application developed to track the project life cycle, from layout creation to completion and close out. A layout is the drawing which includes a sketch and description of company construction work to be performed.
 - Gas Layout Tracker was developed in an attempt to consolidate data from all the parent layout sources that exist today, eliminate redundancies, streamline and standardize processes and fill in the process gaps to add visibility into the entire layout process.
 - CECONY currently has no consolidated tool or system to capture the entire layout process from start to finish, and many of the administrative steps necessary to move a project from one stage to another are not captured in any system.³
- In 2015, Gas Operations performed another work management system review with added focus on asset management. As part of the review, it developed a Gas IT Roadmap to develop standardized work and asset management business processes for Gas Operations. The roadmap initiatives include:
 - A four-year implementation plan, starting in 2016.
 - Deployment of Logica-ARM for gas work and asset management.⁴

¹ DR 725-C Attachment 1

² DR 723-C Attachment 1

³ DR 186-C

- The total estimated capital cost of the Gas Operations work management system implementation is \$98.9 million with an expected annual benefit of \$13 million to be realized upon full implementation. Annual financial benefits will be identified as cost savings from efficiency and productivity gains in process and technology improvements, as well as risk avoidance.⁵

4. CECONY Gas Operations tracks basic work volume and resource levels, but does not currently identify trends in work load levels, productivity and utilization levels.

- Gas Operations produces monthly reports that show monthly and year to date data regarding hours per unit and cost per unit at a regional (borough) level, and compares actual to budget unit rates.⁶
- NorthStar’s review of CECONY Gas Operations productivity reports and other work management reports reveals Gas Operations did not perform any trend analyses of work load levels, productivity and utilization levels.⁷

5. CECONY Gas Operations does not routinely use the data in its work management systems to develop long-term resource plans; but in 2014 and 2015 it performed focused studies to develop a Five-Year Resource Plan to address an increase in upcoming gas work.

- There are three separate organizational components to the Gas Resource Plan: Construction, Distribution, and Engineering. Each of these elements was addressed separately.
- The Gas Construction resource plan was initially developed in October 2014 to address the planned increase in annual main replacement work from 73 miles in 2013 to 119 miles in 2020.⁸
 - The forecast was developed using project work units and “reasonable expectations” of hours to perform main work and service work. The “reasonable expectations” were developed by subject matter experts (SMEs) in each region.
 - The forecast assumes company and unit rate contractor resources are interchangeable and future work methods will be similar to historical norms.⁹
- The Gas Distribution System Resource Plan effort started in July 2015, driven by an increased volume of leak calls from 31,207 in 2013 to 65,409 in 2015.
- The Gas Engineering Support Resource plan also started in July 2015 to increase resources to support the increase in gas work. The Plan was developed using some engineering productivity data available in Gas Layout Tracker.¹⁰

⁴ DR 725-C

⁵ DR 725-C

⁶ DR 187-C Attachment 05, DR 188-C Attachments 6 - 9

⁷ DR 883-C, DR 187-C Attachment 05, DR 188-C Attachments 6 – 9.

⁸ IR 218 Presentation

⁹ IR 218 Presentation

- The Five-Year Gas Resource Plan identifies the number of additional contractor and company resources needed to address the workload. However, the company is in the process of updating the original plan due to unforeseen changes:
 - CECONY Gas Operations attrition
 - Difficulties in attracting gas contractors
 - Higher volume of incoming leaks
 - Re-organization between Gas Operations and Construction Management (see Chapter VI – Program and Project Planning and Management.¹¹

6. CECONY Electric Operations implemented a new work management system which improved its work management capabilities by providing a centralized work planning and management platform to schedule crews, vehicles and equipment.

- The 2008-2009 Liberty Management Audit identified CECONY’s lack of an integrated work management system in Electric Operations as a significant issue. In response, CECONY established a team to develop work management processes. Ultimately, the project team determined that process and organizational changes, coupled with a new work management system, were the best approach to enhance Electric Operations work management processes.
- Implementation of the CECONY Electric Operations Work Management project started in the second quarter of 2010 and concluded in 2014.¹² Key elements include:
 - Establishment of the Electric Operations Work and Resource Management (WRM) organization to perform forecasting, planning and scheduling.¹³
 - Implementation of new business processes.¹⁴
 - Selection and deployment of the Logica-ARM product suite as its core work management system and the ABB Ventyx FocalPoint reporting tool for developing reporting metrics.¹⁵
 - Centralization of Public Improvement Engineering and Regional Engineering.¹⁶
- CECONY reported total cost of the Electric Operations work management improvement process was \$133.6 million. CECONY determined that \$45 million in capital and O&M benefits were realized in 2015 through resource reductions, as shown in **Exhibit VII-4**.

¹⁰ IR 218 Presentation

¹¹ DR 727-C

¹² DR 11-C

¹³ DR 11-C

¹⁴ DR 11-C

¹⁵ DR 11-C

¹⁶ DR 893-C

Exhibit VII-4
CECONY Estimate of 2015 Cost Savings due to
Electric Operations Work Management Improvements

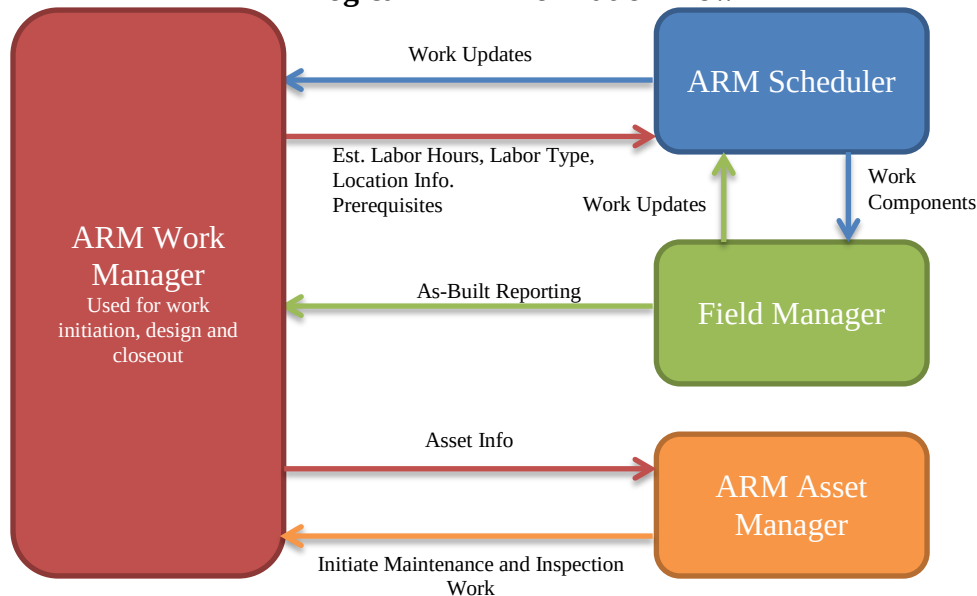
Staffing Impact	Dollar Impact [Note 1]
36% reduction in clerical resources because 90% of field crews are receiving work, progressing work and entering time electronically in Mobile Field Manager.	\$5 M
15% reduction in engineering resources as a result of engineering organization restructuring, managing of designer workload and standardization of processes.	\$6 M
14% reduction in targeted field resources due to increased scheduling effectiveness and resource utilization due to process, WRM organization and CGI-Logica ARM Suite implementation. Managing of prerequisites for parking, permits, capacity planning, prioritization and coordination.	\$34 M
Total	\$45 M

Note 1: NorthStar did not audit CECONY's estimates of staffing reductions and associated dollar impacts.

Source: DR 893-C, DR 893-C Attachment 4.

- Logica-ARM standardized the process for planning and managing work across all Electric Operations regions and provided centralized planning and prioritization.¹⁷ Centralized prioritization across all Electric Operations regions was a new concept for CECONY.¹⁸
- An overview of the information flow between the main Logica-ARM modules is shown in **Exhibit VII-5**.

Exhibit VII-5
Logica-ARM Information Flow



Source: DR. 441-C

¹⁷ DR 441-C Attachment 1

¹⁸ DR 441-C Attachment 1

- CECONY's Logica-ARM modules are used for work assignment, resource management, scheduling, time reporting, and other work management functions. **Exhibit VII-6** is a summary of the Logica-ARM modules.

Exhibit VII-6
CECONY's Logica-ARM Modules

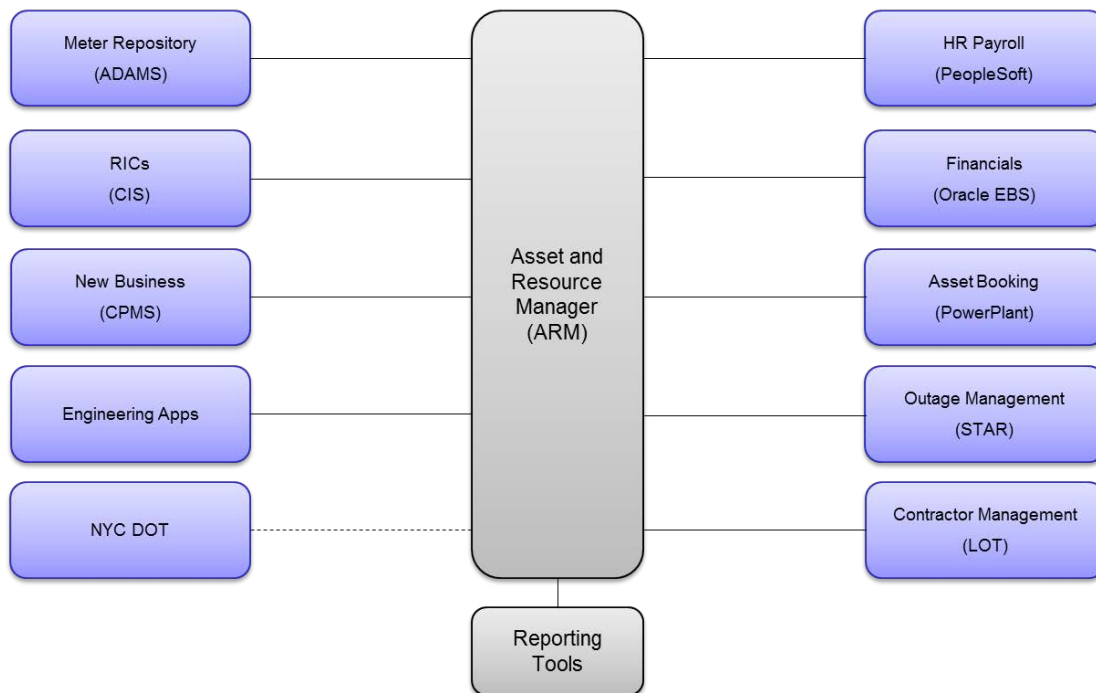
Module	Function
ARM Work Manager - Work Management Information System (WMIS)	• Assigns tasks to the appropriate resource using business rules based on work type, geographic proximity, priority, or other user-defined business rules.
ARM Web Portal	• Web-based tool that allows certain functionality similar to the Work Manager module.
Central Configuration Resource Manager -	• Crew management, resource class availability, and vehicle and equipment management.
ARM Scheduler	• Automatic assignment and dispatch application designed to provide a single view of all resources and portfolios of work across the organization. • Uses business rules and configurable scheduling constraints for efficiency. Work types or tasks are automatically re-optimized as higher priority work types or tasks become available.
ARM Asset Manager	• As a single asset repository, Asset Manager provides tracking of maintenance & inspection work tasks, asset history, and facilitates asset failure analysis.
Mobile Field Manager	• Enables information to be transmitted directly to and from field personnel. Supports time entry generation and reporting capability.

Source: DR 186-C.

7. Logica-ARM has numerous interfaces with other information systems.

- As shown in **Exhibit VII-7**, the Logica-ARM system has interfaces with several other CECONY systems, including:
 - PeopleSoft (Human Resources/Payroll)
 - Oracle (Project Accounting/Supply Chain)
 - PowerPlant (Asset Booking)
 - LOT (Contractor Management)
 - STAR (Outage Management)
 - CPMS (New Business)

Exhibit VII-7 Logica-ARM System Interfaces



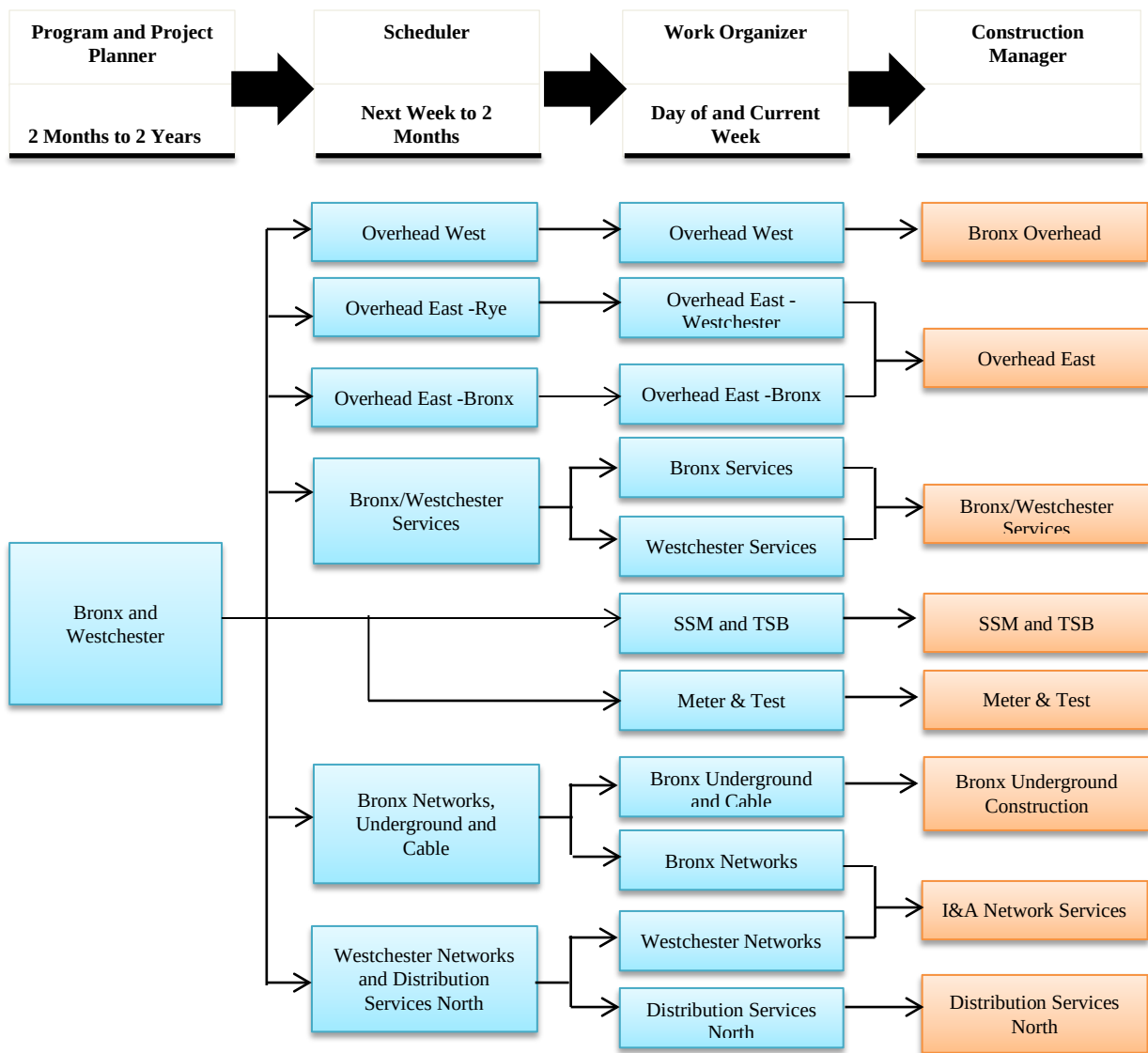
Source: DR 441-C

8. CECONY Electric Operations' newly-established Work Resource Management (WRM) group has sound processes in place for planning and scheduling capital and O&M work.

- WRM reports to the Senior VP of Electric Operations and is responsible for the planning and scheduling of O&M and capital work on CECONY's electric distribution system.
- There are three main positions within WRM:
 - Program Project Planners (PPP) – Focus on the long-term planning horizon (two months to two years).
 - Schedulers – Focus on medium-term planning (next week to two months). Plan work for future weeks and integrate that work plan across construction and operating departments. Assign crews to work for future weeks or months.
 - Work Organizers – Focus on the short-term planning horizon (day-of and current week). Allocate crews to address immediate priorities, respond to emergent work, and support supervisors and crews on a daily basis.¹⁹
- **Exhibit VII-8** provides a schematic of WRM roles and responsibilities.

¹⁹ DR 186-C

Exhibit VII-8 WRM Planning Responsibilities – Bronx/Westchester



9. CECONY Electric Operations' WRM group has adequate processes for the development of long-range and short-range work plans.

- The PPPs develop long range (two months to two years) capability plans for each region using the repository of work in Logica-ARM.²⁰ Work is prioritized across all regions. The capability plan summarizes work-to-be performed and manpower capabilities for each construction organization.

²⁰ DR 441-C

- The regional Cost Management groups develop target hours for each week and month for each construction group. In the capability plans, PPPs evaluate assign the target manhours to specific work.
- The PPPs collaborate with Cost Management and engineering groups to identify outstanding work, relative priorities of that work, progress to goals, and expected funding constraints.²¹
- PPPs use the capability analysis to develop work forecasts for individual regions, and to create an integrated high-level plan for the Electric Operations organization with recommendations for resource allocation, workload, and budget implications.²²
- The PPPs update the long range work plans (capability plans) on a routine basis and identify any deviations from the targets. The updated capability plan is reviewed monthly in various forms:
 - Each construction manager reviews the capability plan with his supporting PPP to examine program and project status and identify any work that exceeds the financial or crew resources.
 - Regional Engineering meets with PPPs, Schedulers, and others to review capital work plan projects and programs. This meeting with Regional Engineering provides the PPP with an updated work plan, and the Regional Engineering group with an understanding of when work plan will be executed.
 - The Monthly Electric Operations Work Planning Meeting addresses the work plan and competing priorities throughout the department. Regional leadership and support groups review key projects and programs, funding, and progress to goals.²³
- The capability planning process has led to decisions to move crews between regions to support the highest priority work.²⁴ The concept of moving crews between regions represents a cultural shift for CECONY Electric Operations.²⁵
- The Schedulers and Work Organizers use the capability plan as the basis for medium- and short-term planning.²⁶
- The Scheduler focuses on the two to eight week timeframe and develops electric construction department work plans.²⁷ As part of the medium-term planning, specific crews, prerequisites and major materials are assigned to the work and plotted on a schedule.

²¹ DR 186-C

²² DR 186-C

²³ DR 186-C

²⁴ DR 186-C

²⁵ DR 441-C Attachment 1

²⁶ DR 186-C

²⁷ DR 441-C

- Logica-ARM facilitates the bundling of work by street location and structure, across work types, and by schedule requirements.²⁸
- Work can also be auto scheduled in Logica-ARM using due dates and crew capabilities to match the requirements of the work with the availability of the crews.²⁹
- The Work Organizers, located in each district, control the weekly schedule and update the schedule due to changes in resource or field operating conditions.³⁰ Work packages are dispatched to the field using the Logica-ARM Mobile Field Manager.³¹

10. CECONY Electric Operations uses Logica-ARM data to examine workforce productivity and utilization.

- Performance Indices compare actual time reported against performance standards for work components.
 - The Logica performance standards were developed by subject matter experts based on an evaluation of work elements and historical data.³²
 - The standard hours are based on hands-on time and exclude delays and travel.³³
- Productivity and work measurement data information may be reviewed at different organizational levels in Logica:
 - Electric Operations
 - Region
 - Workout Location
 - Section level
 - Supervisor
 - Crew
- CECONY Electric Operations uses Logica-ARM data to identify trends and work load levels, productivity and utilization. Routine productivity and work management reports include:
 - CECONY Crew Performance Regional Comparison – Compare regional crew performance to each other and to Logica-ARM standards for specific discrete tasks.³⁴
 - Variance Time Analysis – Regional comparison of hours/occurrence, such as delays due waiting for others.³⁵

²⁸ DR 441-C

²⁹ DR 186-C

³⁰ DR 186-C

³¹ DR 186-C

³² 187-C Attachment 02

³³ 441-C Attachment 1

³⁴ DR 187-C Attachment 2

³⁵ DR 187-C Attachment 03

- Regional Monthly Performance Index – Regional comparison of productivity indices at yard level over time.³⁶
- Summary Availability Reports – Projected available hours.
- Crew Utilization – on-going measure of quantity of work compared to crew capability.
- Capability Analysis – Available manhours and work to be performed.³⁷

11. CECONY Electric Operations is continuing to improve its work management processes.

- In January 2015, CECONY hired an external consultant to perform a gap analysis to identify and resolve issues with the ARM Work Management implementation.³⁸
- A key outcome of the gap analysis was the creation of a “Model Office” which serves as a real-world laboratory to develop, test, and refine solutions to work management system, process, and organizational issues, and to train users in applying those solutions.³⁹

12. CECONY Substation Operations, Transmission Operations, and Steam Plants appropriately prioritize, plan, schedule, and track work using Maximo and other work management applications that interface with Maximo.

- Central Operations’ Substation Operations, Transmission Operations, and Steam Plants organizations manage work in IBM’s web-based software, Maximo, using work orders for planned preventive maintenance work as well as emergent corrective maintenance.⁴⁰ These organizations use Maximo and its companion systems for several elements of work management, including:
 - Documenting completed work – Completed work is reported back to supervisors, entered on the daily assignments sheets, and filed electronically in Maximo. When the work involved generates data, the data is also entered in Maximo.⁴¹
 - Capturing labor and time charges for each job – This enables actual labor charges for a particular task to be compared against established standards such as established units of work, engineering labor estimates or other benchmarks as applicable.⁴²
 - Tracking equipment and personnel requirements.⁴³
- In 2010, CECONY implemented DatasplICE software that captures Maximo asset and work order data and stores it in both the Maximo database and a separate database. DatasplICE serves as a user-friendly interface to Maximo so that field forces are more

³⁶ DR 187-C Attachment 04

³⁷ DR 188-C

³⁸ DR 467-C

³⁹ DR 467-C

⁴⁰ DR 186-C

⁴¹ DR 186-C

⁴² DR 186-C

⁴³ DR 186-C

actively providing critical information. CECONY users have developed additional uses for DatasplICE including:

- Much better detail of work performed for preventive and corrective maintenance work
 - Alternative methods of documenting critical tasks, independent of Maximo
 - Improved understanding of the asset life cycle
 - Improved documentation of compliance with policies.⁴⁴
- A DatasplICE upgrade project is in progress. The scope of work includes an upgrade to a web-based version to ensure compliance with supported technology and improve the maintenance and accessibility of the software. Other enhancements will enable increased use of DatasplICE to document inspections, testing, and maintenance.⁴⁵
 - CECONY developed ePlan, which works with Maximo to facilitate maintenance resource management, planning, scheduling, work assignment, and time recording. Key capabilities of ePlan include:
 - Manage resource availability including vacation and training
 - Manage work backlog
 - Create electronic planning packages for conveyance to the working group
 - Create easy to visualize electronic schedules
 - Manage and assign employees to tasks by comparing their availability with the daily work load
 - Manage and document employee availability from a single screen
 - Measure group and individual performance through detailed analysis of job estimates and actual hours worked.⁴⁶
 - The implementation status of ePlan varies by organization.
 - ePlan was first implemented as a pilot project in 2012.
 - Central Operations began roll-out of ePlan to all of Substation Operations in 2014.⁴⁷
 - ePlan was expected to be implemented in Transmission Operations and Construction Services in 2016 and will be partially implemented in Steam Plants in 2016.⁴⁸
 - There is also a pilot project to use the ePlan software in Central Engineering.⁴⁹
 - Until it implements ePlan, Steam Plants continues to use a Microsoft Project/Maximo interface to produce weekly maintenance schedules for planned work items.

⁴⁴ DR 11-C

⁴⁵ DR 893-C

⁴⁶ DR 11-C

⁴⁷ DR 11-C

⁴⁸ IR 150

⁴⁹ DR 893-C

- Daily crew assignments sheets based on work items within Maximo are used to schedule work.
- Work assigned is based on items pending in the Maximo system as well as any emergent jobs identified as a priority that are typically carried on equipment status and supervisor reports.⁵⁰

13. Maximo has appropriate interfaces with other information systems.

- Central Operations uses the Outage Scheduling System in conjunction with Maximo to coordinate and schedule work activities consistent with system conditions and outages required.⁵¹
- Central Operations uses Maximo to order materials and transportation via a real-time interface to the mainframe system or order directly through CECONY's procurement systems.⁵²
- Maximo also interfaces with CECONY's Oracle EBS solution to support cost analyses associated with equipment replacement, design improvements, and work process changes.⁵³
- CECONY developed the Maintenance Technical Library (MTL) to help engineers easily find maintenance information to facilitate maintenance analysis.⁵⁴
 - MTL is a centralized repository for equipment information that enables users to quickly find and access data regardless of where the information resides.⁵⁵
 - Maintenance and Engineering personnel use MTL to assist in maintenance planning and execution, equipment condition assessment, and performance trending.
 - MTL works seamlessly with ePlan and is being incorporated into a common asset management platform.
 - MTL also has history files, which allows users to save files electronically and associate them with equipment so that others can access them through MTL.⁵⁶
- Asset Management Web Reports provide Substation Operations with automated reports including work order backlogs and overdue preventive maintenance. These reports may be distributed automatically by e-mail.⁵⁷

⁵⁰ DR 186-C

⁵¹ DR 186-C

⁵² DR 186-C

⁵³ DR 186-C

⁵⁴ DR 186-C

⁵⁵ DR 11-C

⁵⁶ DR 11-C

⁵⁷ DR 11-C

14. CECONY Substation Operations, Transmission Operations, and Steam Plants use work management systems to capture productivity data, but do not identify trends in workload levels, productivity, and utilization or to develop resource plans.

- Substation Operations, Transmission Operations, and Steam Plants currently capture basic information such as total number of units, total manhours, and cost per unit in monthly reports, but do not routinely perform any trend analyses.⁵⁸
- Central Operations plans to use the data captured in ePlan to perform trend analyses, but does not currently have sufficient historical data for trending.⁵⁹
- Central Operations does not currently use data from Maximo to develop resource plans, but plans to use the new work management systems to become more effective in determining work requirements, including changes in preventive maintenance scope, frequency, and manhour estimates.⁶⁰

15. Steam Distribution is currently upgrading its Steam Operating Mapping and Information System (SOMIS) to provide interfaces with other systems, allow mobile data entry, and improve its reporting capabilities.

- Steam Distribution uses SOMIS to plan and track trouble work, planned work, and pending work from origination through completion.⁶¹
- The SOMIS work management system has the following capabilities:
 - SOMIS Map – a graphical schematic map of the Steam Distribution system. All items on the map are linked to the SOMIS Map database for component asset tracking and management. The map is also used for generation of Main Steam Outage (MSO) operating orders and work permits.
 - Steam Plates – Maps indicating the exact locations of steam pipes, equipment, welds and flanges relative to street curbs and building lines.
 - Loose Leafs – As-constructed field drawings of pipe work installed within the steam system.
 - Steam Online – A website that contains a repository of procedures and drawings associated with the Steam Distribution system.
 - Field Operations Job Tracking – Tracks street deficiencies.
 - Field Operations Inspection System – Used to schedule PSC-mandated inspections, violations and deficiency reports.
 - Productivity – All field operations work is tracked and unitized for productivity measurement.
 - Personnel Scheduling - Employee vacations and shift scheduling.⁶²

⁵⁸ DR 188-C Attachment 5

⁵⁹ IR 150

⁶⁰ IR 150

⁶¹ DR 186-C

⁶² DR 186-C

- Steam Distribution is currently implementing a new work management system, SOMIS Job Tracking System (JTS). SOMIS/JTS has the same capabilities as SOMIS, plus:
 - Mobile data entry
 - Integration with other IT systems such HR/Payroll, Business Intelligence, and Steam Remote Monitoring System.
 - Additional reporting features, including productivity at the crew level.⁶³
- Most of the new SOMIS/JTS system was implemented in 2015. CECONY expects the new system to be fully implemented by June 2016.⁶⁴

16. Steam Distribution personnel use SOMIS/JTS data to plan the work, order materials, coordinate with customers, and schedule main steam outages.

- Steam Distribution managers coordinate with steam customers, the System Operations Energy Dispatcher and Steam Distribution Engineering to schedule main steam outages as required.⁶⁵ Steam Distribution Planning personnel develop seven-day outage work plans in Excel.⁶⁶
- Work is assigned based on items pending in SOMIS/JTS, as well as any emergent trouble ticket jobs. There are three main sources of work: planned, inspections, and complaints.⁶⁷
 - Complaints and requests from the public and customers are initially tracked in the ECS.
 - ECS data is transferred to SOMIS/JTS and tracked until the work is complete.⁶⁸
- The scheduling of most steam distribution work is driven by the “time to violation” data provided in SOMIS/JTS reports. Scheduling and prioritization of work is based on a number of factors including safety, regulatory compliance, system reliability, public/customer impact and work/permit constraints.
- Daily crew assignments sheets based on work items within SOMIS are used to schedule work and resources.⁶⁹
- Class and stock materials that are required for a work order are ordered using the CECONY’s procurement systems.⁷⁰

⁶³ DR 908-C Confidential Response

⁶⁴ DR 908-C Confidential Response

⁶⁵ DR 186-C

⁶⁶ DR 908-C Confidential Response

⁶⁷ DR 908-C Confidential Response

⁶⁸ DR 186-C

⁶⁹ DR 186-C

⁷⁰ DR 186-C

17. SOMIS/JTS data is used to monitor and trend equipment performance and compare actual to planned labor hours; however, there are no routine trend analyses of productivity and utilization.

- Work completed is reported back to supervisors, entered on the daily assignments sheets and filed electronically in SOMIS/JTS.
- SOMIS/JTS tracks productive and non-productive time.
 - Each job type has a specific activity and account number for productive work
 - Non-productive work has bucket account numbers for each section
 - Work performed is documented in SOMIS/JTS
 - Hours are entered directly into JTS. Mobile data entry will be fully implemented by the second quarter of 2016.⁷¹
- SOMIS/JTS captures labor and time charges for each job which enables actual labor charges to be compared against established standards.⁷²
- Periodic maintenance data sheets are also entered into SOMIS to monitor and trend equipment performance.⁷³
- O&M financial results are monitored monthly through reports produced by Cost Management. The report identifies monthly and year-to-date dollar and unit variances for steam distribution activities.⁷⁴
 - Unit and hours data from JTS
 - Cost data from Oracle Business Intelligence.⁷⁵
- There are no routine productivity or utilization trend analyses.⁷⁶
- Steam Distribution KPIs include productivity results for high-dollar O&M programs.⁷⁷

18. Steam Distribution has a sound approach to long-term resource planning, but has not performed a study of contractor versus in-house costs in over ten years.

- Steam Distribution performs long-term resource planning for its O&M and capital programs.
 - Manhours required for ongoing capital programs and O&M are based on three years historical trending

⁷¹ Steam Distribution Presentation

⁷² DR 186-C

⁷³ DR 186-C

⁷⁴ DR 908-C Confidential Response

⁷⁵ DR 908-C Confidential Response

⁷⁶ DR 188-C Attachment 5

⁷⁷ DR 908-C Confidential Response

- Manhours for unique projects and programs are from appropriation estimates.⁷⁸
- Steam contracts out all capital and O&M excavation work. There are currently two unit price contracts.⁷⁹
- The Steam Distribution Department last conducted a study of contractor versus in-house costs in 2004 and 2005.⁸⁰

19. O&R's WMS is an effective work management system which provides controls, tracking and reporting.

- O&R uses its Work Management System (WMS) for the majority of its capital and maintenance construction work. O&R's Electric Operations, Gas Operations and Substations Operations all use WMS to manage work throughout the job lifecycle.
- As shown in **Exhibit VII-9**, the WMS System assigns each work request a status code which increases as job requirements are met and the job progresses. This status code allows a user to determine the level of progress of any job.⁸¹

**Exhibit VII-9
O&R WMS Job Lifecycle**

WMS Status	Requirement Range	Description
10	11 – 19	Initiation
20	21 – 29	Design
30	31 – 39	New Business Approvals
40	41 – 49	Line Technical Services/Executive Approvals
50	51 – 59	Scheduling
60	61 – 69	Construction
70	71 – 79	Material/Labor Audit
80	81 – 89	Closing
90	91 – 99	Mapping/Booking
99	99	Closed, History

Source: DR 502-O Attachment 1

- There are specific project requirements which must met before a project is moved to the next status. The requirements are assigned automatically by WMS based on the job and request types selected when the work order is created. Some requirements are common to every job, such as work order approval, job scheduled, job completed, and mapping. Others status requirements are specific to the type of work – for example, for streetlight work, it is necessary to input the type of bulb replaced before the WMS status changes.⁸²

⁷⁸ DR 908 Confidential Response

⁷⁹ DR 908 Confidential Response

⁸⁰ DR 824-C

⁸¹ DR 168-O Attachment

⁸² DR 672-O

- WMS status requirement groups serve as a measure of control when applied in tandem with constraints set on job types. For example, a work order estimated to exceed \$100,000 of capital funding is automatically prevented from being released to construction without having a job and request type containing a requirement group that includes getting Capital Budget Priority Committee approval.⁸³
- WMS requires an explanation of significant variances (15 percent or higher) in planned vs. actual manhours or units before the project can progress to Status 80 – Closing.⁸⁴

20. O&R has upgraded WMS to enhance its capabilities and provide appropriate system interfaces.

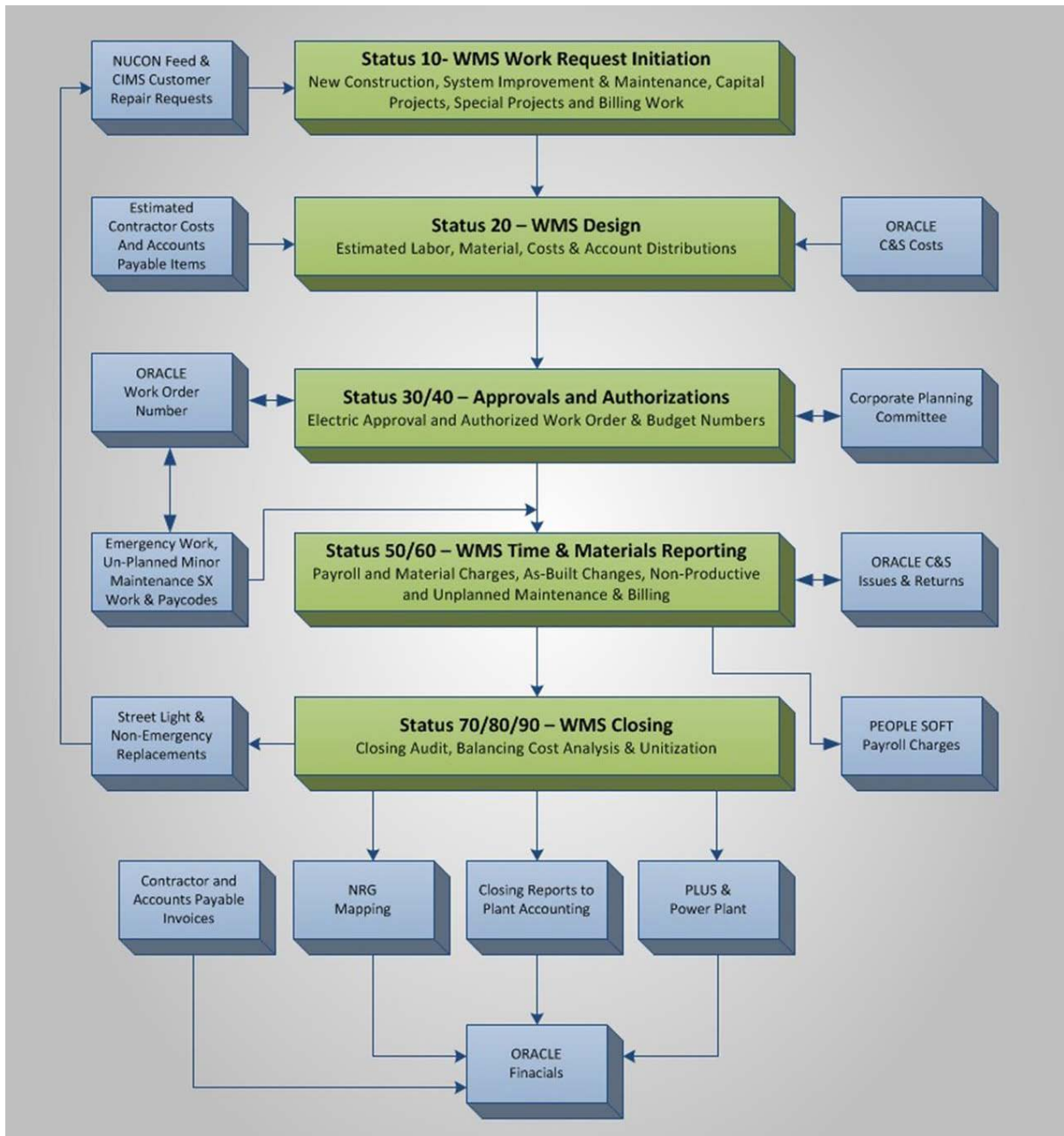
- WMS is a main frame computer system supported by a dedicated Information Resources team that is responsible for over 20 major upgrades since O&R first purchased the system in 1990. The upgrades include enhancing system capabilities to address additional work types, such as gas construction, as well as key system interfaces, including:
 - PeopleSoft (HR/Payroll)
 - Oracle (Project Accounting/Supply Chain)
 - PowerPlant
 - Mapping
 - Customer Information Management System (CIMS).⁸⁵
- The O&R WMS job status flow and associated system interfaces are shown in **Exhibit VII-10**.

⁸³ DR 672-O

⁸⁴ DR 672-O

⁸⁵ DR 502-O Attachment 1

Exhibit VII-10 O&R WMS Flow Chart and System Interfaces



Source: DR 502-O Attachment 1.

- O&R has continued to improve the WMS in recent years as summarized in **Exhibit VII-11**.

Exhibit VII-11
O&R WMS Improvements 2012 – 2015

Name	Description	Year	Productivity Improvements
Oracle/Enterprise Business Systems	Convert legacy accounting structure and processes. Develop new interfaces for time reporting, material requisition, project setup, and asset reporting.	2012	Full integration with Oracle means data does not need to be translated to legacy accounting. Provides consistency of reporting. Maintains WMS integration with external systems, payroll, property records, supply chain.
Streetlight Project	Customer Service initiative to develop a web portal to report streetlight outages. Added an interface from CIMS to WMS to import streetlight jobs from web portal. Added an interface from WMS to another system to maintain streetlight information.	2012-2013	Secondary benefit of eliminating duplicate streetlight jobs per year in WMS. On average 270 streetlight jobs are cancelled per year because of duplicates. 2014: 67 duplicates 2015: 12 duplicates
Visual/Pole Inspection Interface	Creates an interface between contractor's database and WMS to allow Line Technical Services (LTS) to view visual inspection defects and pole inspection status within WMS to incorporate solutions in other work orders at the same X/Y coordinate. Passes completion information to database when pole is replaced or defect is corrected.	2013-2014	Reduced handoffs of manual pole inspection assignments, and removes manual data entry requirement.
Actual Cost Interface	New interface capturing actual cost data originating from Oracle.	2014	Prevents work from being released to construction in excess of the budget. Adds increased reporting functionality.
Blackbook	Allows WMS to track retired gas service lengths, diameters and type.	2014	Provides more accurate reporting.
Permit Automation	Added an automated permit process for pole setting.	2013	Streamlines pole permitting process Reduces risk of setting poles without a permit.
WMS Process Enhancements	Streamline charging time to paycodes process. Streamline work order approval process. Associate gas services to their respective main replacement jobs.	2012-2015	Eliminates payroll errors/increased accuracy of time reporting. Eliminates project setup errors. Provides increased tracking of capital budget projects.
Transformer Consolidation	Consolidation of transformer account numbers and associated changes to material requisition process.	2015	Provides increased tracking of transformers installed.

Source: DR 893-O.

21. O&R uses WMS to track productivity, utilization, availability and overtime, but it does not routinely perform trend analyses of these performance measures.

- WMS compiles the actual hours charged by company crews, and on a weekly basis summarizes overall availability and productivity by each category of work (e.g., new business, repair and replace gas infrastructure for safety and reliability, electric system integrity and voltage complaints).⁸⁶ The WMS productivity report includes the following:
 - Earned hours – Estimated hours for completed jobs
 - Actual Hours
 - Utilization (or Productivity) – Earned hours divided by Actual hours
 - Travel Factor – Travel hours divided by available hours
 - Non-productive Factor – Other non-productive time (training, yard time) divided by available hours
 - Job site factor – time on site divided by available hours⁸⁷
- The WMS productivity reports do not have graphics or any trend analysis.⁸⁸ O&R has developed an Excel-based ad hoc report with graphics that shows trends and targets.

22. O&R does not update the estimated hours in WMS to reflect changes in work force productivity.

- O&R tracks a productivity factor, rather than a unit rate. O&R calculates the productivity factor by taking the ratio of the estimated labor hours for each completed job or task to the actual labor hours charged. A ratio of less than one means the job took longer than the estimate.
- O&R updates estimated standard hours when the scope of work changes, but not to reflect changes in workforce productivity.
 - The baseline estimated standard hours for compatible units in WMS is based on 1977 O&R time-motion study to observe field crews performing units of work, such as setting/removing a pole or installing a transformer.⁸⁹
 - As changes in the scope of work occurred, such as technology improvements or changes in regulatory requirements, Operations and Engineering reviewed the impact on the times required to perform the associated work units.
 - Upon agreement that a compatible unit estimate should be adjusted, Engineering will update it in WMS. If a new compatible unit is needed (to represent an activity not previously required) Engineering will create the new unit in WMS.⁹⁰

⁸⁶ DR 186-O

⁸⁷ 186-O-Attachment 2

⁸⁸ 186-O-Attachment 2

⁸⁹ DR 751-O

⁹⁰ DR 751-O

- In order for the productivity factor to be meaningful over time, O&R does not typically update the estimate manhours for each job.⁹¹
 - The productivity factor changes when O&R updates estimated hours in WMS.
 - O&R determines the estimated labor for a job or task based on the labor targets of all the WMS compatible units comprising the estimate.⁹²

23. O&R planners appropriately use WMS data to plan and schedule upcoming work and to generate material requisitions.

- O&R Electric Operations and Gas Operations planners and the Substation Operations manager are responsible for planning. These individuals are responsible for:
 - Coordinating with internal customers to prioritize projects
 - Determining the availability of O&R manpower and contractor resources
 - Scheduling or coordinating in tandem with supervisory staff to schedule all capital and O&M projects.⁹³
- Annual manpower requirements are developed using WMS data.
 - The workload for the year (by month) is planned based on estimated labor hours and work types.
 - WMS has screens that track individual job layout designs, labor, material, and accounts payable. WMS data are grouped by job type for input into the manpower planning program.
 - WMS productivity reports provide the manpower planning process with estimated and actual labor hours which are used to determine available manpower and resulting contractor complement.
 - Actual hours, availability and productivity are compared to the budgeted manpower to determine if adjustments to the labor targets are necessary.⁹⁴
- As discussed in Conclusion 22, manhour estimates are not updated to reflect change in crew productivity. Therefore, planners must include productivity results in their forecasts of resource requirements.
- The planners use WMS and work with construction supervisors to develop the Week Ahead and Two Week Ahead work schedules. Gas Operations also uses its Gas Inspection Management System (GIMS) to help prioritize and schedule work.⁹⁵
- Material costs are updated on a weekly basis through the Oracle interface.⁹⁶
- WMS automatically generates material requisitions through the Oracle interface.⁹⁷

⁹¹ IR 185

⁹² DR 751-O

⁹³ DR 275-O

⁹⁴ DR 186-O

⁹⁵ DR 275-O

⁹⁶ IR 185 O&R WMS/DR 502

24. The CECONY and O&R engineering organizations do not have formal work management programs. While CECONY has made recent improvements in work planning, none of the engineering organizations track engineering productivity, and only CECONY's Central Engineering group routinely performs resource planning.

- None of the Engineering organizations have a work management system that tracks all work activities.⁹⁸
- CECONY Electric Operations and Gas Operations recently-established work resource management organizations (PPPs and Schedulers) that coordinate with engineering organizations to facilitate work prioritization and planning.
 - In CECONY Electric Operations, the Regional Engineering team hosts a monthly meeting with the PPPs, Schedulers, and others to review the capital work plan projects and programs. This discussion addresses key dates and deadlines, the schedule of layout design releases as well as emergent work, backlog goals, and budget status.⁹⁹
 - In CECONY Gas Operations, all work is linked to Gas Tracker (see Conclusion VII-3) and is managed and prioritized by work organizers and construction. Work organizers determine the priority of all distribution capital work, with the field engineer's assistance.¹⁰⁰
- Engineering work is managed, tracked and issued to the field in various systems.
 - CECONY Regional and Distribution Engineering use Logica-ARM to issue work.¹⁰¹
 - CECONY Gas Distribution Engineering groups each use a different system to track and manage work.
 - New Business and Gas Conversion use CPMS to manage new business request cases.
 - System Reliability uses an Access database to track and manage main replacement, winter load relief, system reinforcement and supply main work.
 - Interference Support uses a web-based database to track and manage encroachment work.¹⁰²
 - In CECONY Central Engineering, work is driven by Engineering Service Requests (ESRs), asset replacement and risk reduction programs, system planning, regulatory compliance, engineering inspection and condition assessment programs. The ESR system is administered by the Project Program and Support group. ESRs must be responded to within 90 days of initiation.¹⁰³

⁹⁷ DR 502-O

⁹⁸ DRs 350-C, 351-C, 353-O, 354-O, 909-C, 444

⁹⁹ DR 186-C

¹⁰⁰ DR 909-C

¹⁰¹ DR 444-C Attachment 1

¹⁰² DR 909-C

¹⁰³ DR 443-C

- O&R engineering organizations use WMS to document design information including estimated costs and materials, and to track the completion of design milestones, such as engineering review, the development of drawings, and supervisor approval.¹⁰⁴
- CECONY Central Engineering is the only engineering organization that currently routinely performs long-term resource planning.
 - Central Engineering's Section Resource Managers currently determine the in-house and outside services resource needs each Spring, based on the draft five-year capital plan and manhour estimates from the ESRs, results from inspection programs and field/system engineering work.¹⁰⁵
 - The other O&R and CECONY engineering organizations maintain a consistent permanent engineering workforce size, and address annual variations by overtime and the use of contractors for large "one-off" projects.¹⁰⁶
- As discussed in Conclusion VII-5, CECONY's Gas Operations Five-Year Resource Plan identifies the need for additional engineering resources to support the increased work load.¹⁰⁷ The need for additional engineering was identified in response to an identified problem, not through routine resource planning efforts.¹⁰⁸
- None of the Engineering organizations track engineering productivity.¹⁰⁹

25. CECONY Central Engineering's Continuous Improvement Program includes initiatives to improve resource management and other work management-related issues.

- Central Engineering's Continuous Improvement Program is based on employee initiatives and improvement initiatives across the corporation. A Continuous Improvement Team (CIT) is formed to follow-up on an initiative.¹¹⁰
- As part of its Continuous Improvement Program, Central Engineering established a Resource Management Team to develop a standard resource management process and tool.
 - As of 2015, the Resource Management Team developed an improved resource management process and identified a software tool to facilitate the process.
 - It is anticipated that the improved process and software tool will be tested by two engineering sections in 2016.¹¹¹

¹⁰⁴ DR 503-O Confidential Response

¹⁰⁵ DR 443-C

¹⁰⁶ DR 444-C

¹⁰⁷ DR 727-C

¹⁰⁸ DR 727-C

¹⁰⁹ DR 444

¹¹⁰ DR 11-C

¹¹¹ DR 754-C

- The long term goal is to develop a standard resource management tool for all Central Engineering departments.¹¹²
- CECONY's Central Engineering Group's Continuous Improvement Program has additional initiatives to improve work management related issues, including
 - Excellence in Planning (completed) – The purpose of this team was to define a Best in Class planning process that ensures the highest value work is identified, evaluated, prioritized, and developed. The team benchmarked existing processes against recognized best practices and developed guidelines and recommendations for implementing new planning processes. The work from this team led to the creation of a new group to implement a new planning process for projects.¹¹³
 - Standardization in Engineering and Design Team (in process) – The purpose of the team is to identify and establish standard engineering product templates for recurring engineering activities to achieve efficient, consistent and quality products.¹¹⁴
 - Engineering Package Process Improvement Team (in process) – The purpose of this team is to investigate opportunities to streamline construction package development, and recommend and implement improvement ideas that will reduce cost, improve efficiency and enhance customer satisfaction.¹¹⁵

26. Cross-training opportunities are limited by qualification requirements; nevertheless, both CECONY and O&R use employees across functional areas in some instances. O&R has also improved the efficient use of its resources through the sharing of specific job tasks between job titles within a commodity.

- Neither CECONY nor O&R has performed formal studies to support moving electric, steam or gas crews between commodities to handle routine work.¹¹⁶
- CECONY Gas Operations uses Construction Services and Steam Operations to perform some activities, but due to Operator Qualification regulations and the transition to the Northeast Gas Association, any additional cross-training is limited.¹¹⁷
 - Construction Services performs some gas construction activities, including shop fabrication of regulator stations and field construction of gas facilities.
 - Qualified individuals from Steam Operations and Construction Services perform welding for Gas Operations, as Gas Operations does not have welders.¹¹⁸
- CECONY Electric Operations supplements electric crews with gas and steam crews during Incident Command System mobilizations for Underground Heat Events or during Overhead Storm Events.¹¹⁹

¹¹² DR 468-C

¹¹³ DR 468-C

¹¹⁴ DR 468-C

¹¹⁵ DR 468-C

¹¹⁶ DRs 440-C and 440-O

¹¹⁷ DR 440-C

¹¹⁸ DR 440-C

- CECONY Steam Operations Steam Distribution uses Gas Operations and Construction Service crews to augment staff during rain event triggers and significant coastal storms as needed. These crews pump to dewater steam manholes of collected storm water.¹²⁰
- CECONY Steam Operations does not typically share routine scheduled work as its work requires extensive training.¹²¹
- At O&R, the Electric and Gas organizations may perform work for each other for lower skilled work such as trenching.¹²²
- O&R has negotiated with the union to share job tasks between job titles in the same functional area. For example, O&R assigned the Overhead Electric Troubleshooter group underground cable testing, a task previously only assigned to the Underground Electric group, potentially reducing outage duration times as well as avoiding over-allocation of resources to a specific job.¹²³

27. CECONY does not have excessive backlogs.

- Gas Operations had no leak management backlog through 2014.

Exhibit VII-12
Gas Operations Leak Management Backlogs

Year	Total		Workable	
	Target	Actual	Target	Actual
2012	≤1375	997	≤45	10
2013	≤1350	811	≤40	13
2014	≤950	740	There was only a total backlog target in 2014	

Source: DR 781-C

- CECONY Substation Operations and Steam Plant corrective maintenance backlogs for the past three years are shown in **Exhibit VII-13**. CECONY states that the backlogs have been fairly consistent and there are no issues with the present levels. In all work groups, backlogs are managed using work order priorities and are regularly reviewed.¹²⁴

¹¹⁹ DR 440-C

¹²⁰ DR 440-C

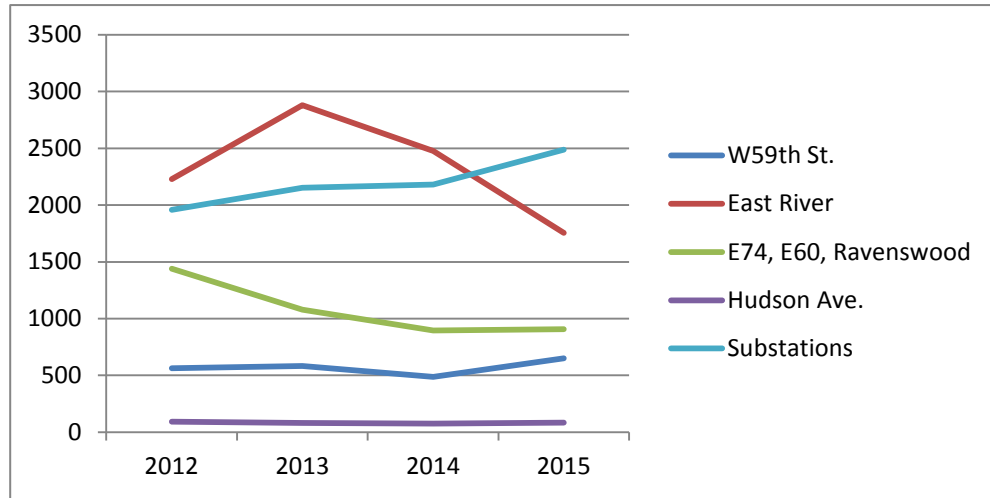
¹²¹ DR 440-C

¹²² DR 440-O

¹²³ DR 440-O

¹²⁴ DR 781-C

Exhibit VII-13 Substation and Steam Plant Corrective Maintenance Backlogs



Source: DR 781-C

- **Exhibit VII-14** shows backlog levels for Steam Distribution from 2012-15.

Exhibit VII-14 Steam Distribution Backlogs

Section	2012	2013	2014	2015
Field Ops/Construction (Outside Work)	780	980	1,202	2,094
Steam Distribution Services (Inside Work)	4,236	4,242	4,365	4,534
Total	5,016	5,222	5,567	6,628

Source: DR 781-C.

- According to CECONY, the Steam Distribution backlog levels are at an acceptable level that allows the operation of the system safely and reliably while meeting all regulatory and procedural requirements. The upward trend in backlog levels for outside work is primarily due to a mandated capital program to explore the feasibility of operating and maintaining a new Remote Monitoring System at over 2,000 manholes.
 - This program is nearing its completion and CECONY expects the backlog levels to start to normalize and then decrease.
 - All jobs in the backlog are prioritized with respect to public safety, regulatory compliance, reliability, and public/customer impact and reviewed on a regular basis.¹²⁵
- **Exhibit VII-15** shows backlog levels for Transmission Operations defects.¹²⁶

¹²⁵ DR 781-C

Exhibit VII-15
Transmission Operation Defect Backlogs

Section	2012	2013	2014	2015
Underground Transmission	341	677	206	257
Transmission Line Maintenance	54	19	19	93

Source: DR 781-C Attachments 4 and 5

- There is no backlog target for underground transmission corrective maintenance. According to CECONY, backlogs have been trending at a consistent level. Work orders are generated for defects, reviewed and assessed for priority, and scheduled for repairs accordingly (address critical safety and reliability defects).¹²⁷
- For Transmission Line Maintenance, defects are classified by priority in accordance with the PSC standards and repair timeframes range from one week (Priority I) to three years (Priority III).¹²⁸

28. O&R uses WMS to track backlogs and does not have excessive backlogs.

- O&R runs weekly backlog reports using WMS and retains them for five weeks. O&R plans to change this to a yearly report that will be retained for five years for future tracking and analysis.¹²⁹
- O&R states that it does not have excessive backlogs in Electric Operations, Substation Operations, or Gas Operations.¹³⁰

29. CECONY tracks overtime and appropriately includes target overtime rates in its KPIs.

- Each CECONY organization has an overtime metric as part of its KPIs. Targets for this metric are determined using historical levels, future work plans, budget constraints and resource capability analysis.¹³¹
- CECONY's 2015 overtime KPIs and actual overtime rates 2010 through 2014 for operations organizations and construction are shown in **Exhibit VII-16**.

¹²⁶ DR 781-C

¹²⁷ DR 781-C

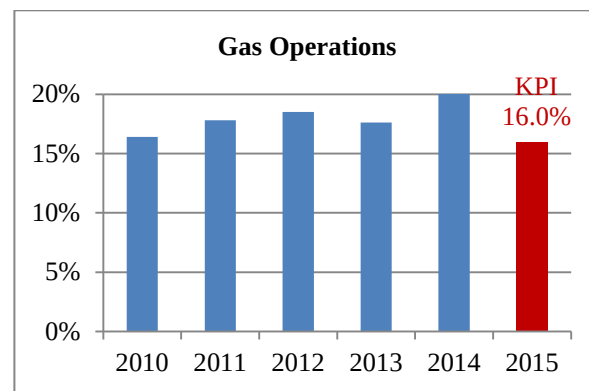
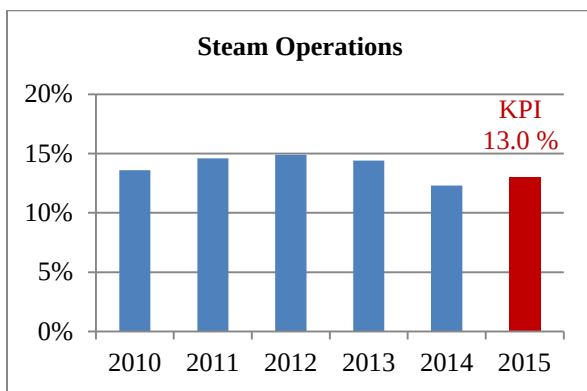
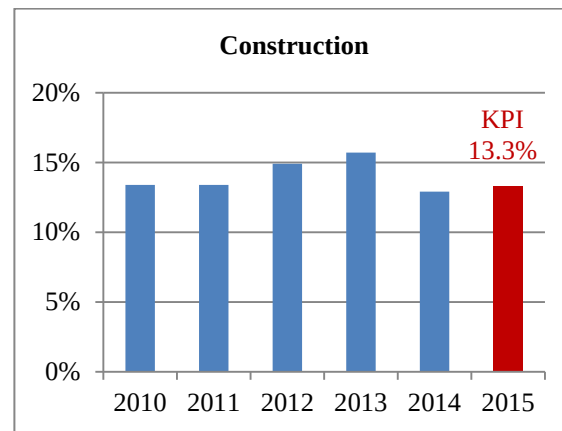
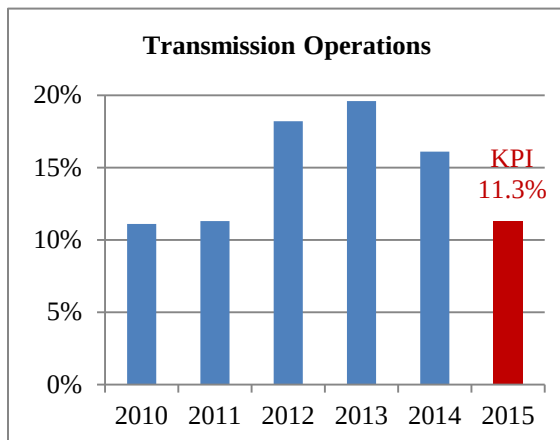
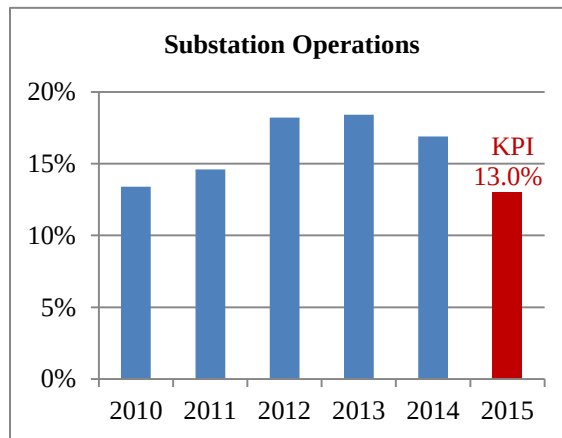
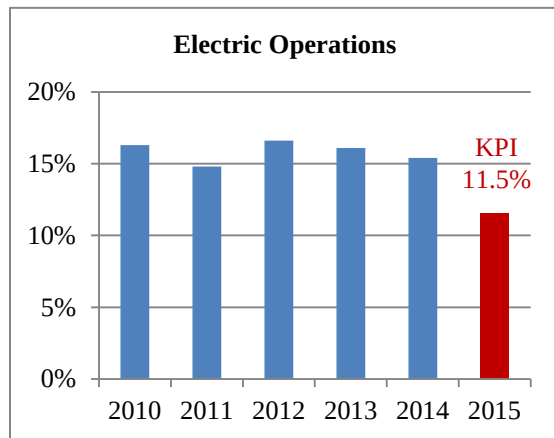
¹²⁸ DR 781-C

¹²⁹ DR 782-O

¹³⁰ DR 781-O

¹³¹ DR 680-C

Exhibit VII-16 CECONY Operations Overtime Rates



Source: DR 191-C, including all attachments. Overtime includes Engineering hours; DR 788-C Attachments 13, 31 and 38.

- For the years 2010-2014 the overtime rate for CECONY's Gas Operations exceeded 15 percent. According to CECONY, this is due, for the most part, to the new and growing work streams in Gas Construction and Distribution Services related to oil-to-gas conversions, new business, the main replacement program, and increases in leak response and repairs.

- In 2011, the new oil-to-gas conversion group was created due to the increased demand from customers to convert from oil to gas. The new group had an extremely large backlog of service requests to process, which in turn amounted to a lot of overtime to try to drive down the backlog by the end of the year.
 - In March 2014, the East Harlem incident occurred. After the incident, the number of incoming odor calls related to leaks expanded quickly due to CECONY's public awareness program. By the end of 2014 there was almost a 100 percent increase in incoming odor calls. Emergency response, surveillances and leak repairs increased dramatically relying on a relatively static internal work force.¹³²
- CECONY cites a number of factors for its overtime rates in other areas.
 - Emergency response is a primary driver for overtime in Electric Operations and Transmission Operations.¹³³
 - Substation Operations uses overtime to address major planned and unplanned work, to reduce equipment outage durations, cover open fixed-post positions, work related to Transmission Interconnection projects, resource requirements during emergencies and contingency events to ensure a continued high level of system reliability.
 - In System and Transmission Operations, there are several initiatives underway to reduce overtime including actively filling vacancies due to retirements, advancements and terminations. Also, CECONY determined the root cause of dielectric fluid feeder leaks and accelerated the Pipe Enhancement/Coating Refurbishment program. This preventative approach, which has proven successful in driving down the number of leaks, will drive down the number of dielectric fluid leak emergencies and resultant overtime work.¹³⁴
 - Substation Operations actions to reduce overtime levels include the following:
 - Review overtime requirements in advance and eliminate where possible.
 - Consider leaving operator fixed post positions open when operating conditions allow.
 - Schedule equipment outages to eliminate weekend work where possible to reduce overtime requirements.
 - Pilot program to streamline and reduce outage durations for High Voltage Circuit Breaker and Transformer Replacements with initiatives in performing critical tasks in parallel and reduced workforce opportunities.¹³⁵
 - Gas Operations five year resource plan includes a significant internal hiring, a training plan and continued increases in contractor resources to address the

¹³² DR 679-C

¹³³ DR 679-C

¹³⁴ DR 680-C

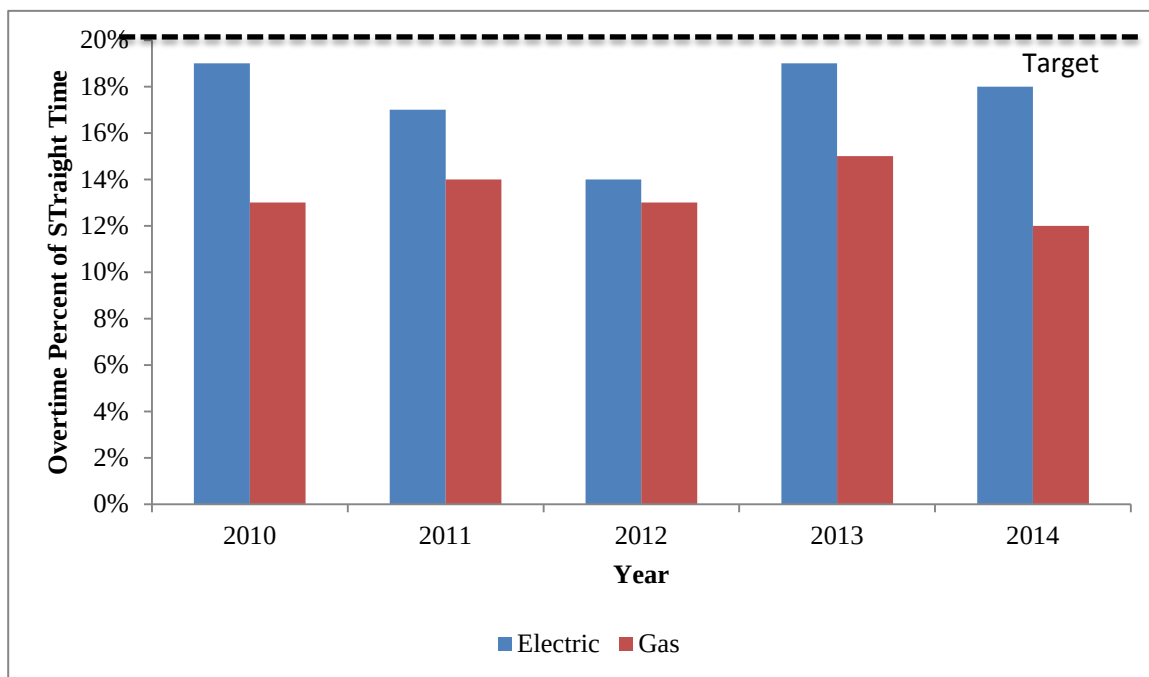
¹³⁵ DR 680-C

increasing work volumes.¹³⁶ This should reduce overtime. See Conclusion 5 for further discussion.

30. O&R appropriately tracks overtime on a monthly basis; however, its 20 percent target overtime rate for electric, gas and substation operations field personnel is too high.

- O&R’s electric, gas and substation operating organizations each have the same annual target overtime rate: “Work hours should not exceed 20 percent overtime as a percentage of straight time (excluding storms, and storm preparation.)”¹³⁷
- The 20 percent target rate is too high. As shown in **Exhibit VII-17**, O&R Electric and Gas operations overtime rates generally have not reached or exceeded the 20 percent target.

Exhibit VII-17
O&R Electric Operations and Gas Operations Overtime Rates



Source: DR 191-O, including all attachments. Overtime is for Operations personnel only, no Engineering.

- O&R primarily uses overtime for real-time or emergency responses such outages (Electric Operations), off-hour gas order calls (Gas Operations), and equipment failures (Substation Operations).¹³⁸

¹³⁶ DR 680-C

¹³⁷ DR 783-O

¹³⁸ DR 783-O and DR 895-O

- O&R has implemented or initiated initiatives to control and reduce overtime in Electric Operations, which had overtime percentages over 15 percent in four of the last five years.
- In the summer of 2009, O&R implemented the Alternate Shift initiative that entailed rescheduling day watch overhead line construction resources to the evening shift during the summer period (June-August).
 - The overhead line construction evening shift provides both an expeditious response to late summer day weather-induced outages and to initially use crews on straight time.
 - In 2014, the Alternate Shift period was expanded from the summer months to the start and finish of daylight savings time.¹³⁹
- In 2014 and 2015, O&R implemented “Straight 8” agreements which require crews to bring their meals with them and eat on the job site. Previously, in accordance with the negotiated collective bargaining agreement, crews worked an 8-1/2 hour shift, inclusive of a 30 minute meal period, and were paid overtime if they were required to work during the meal period.¹⁴⁰
- In 2014, a 24 hour/6 day schedule for Eastern Troubleshooters was negotiated and implemented, similar to the Alternate Shift for construction crews.¹⁴¹
- Since 2014, the Distribution Control Center (DCC) and Electric Operations have worked to improve the off-shift utilization of Electric Operations resources. Improved awareness in the DCC and coordination and communication between the DCC and the Electric Operations supervisors helps ensure overtime resources are used efficiently.¹⁴²

D. RECOMMENDATIONS

1. Continue CECONY Gas Operations work management process improvement activities in accordance with its Gas IT Roadmap. A high level overview of the implementation plan is shown below.

¹³⁹ DR 680-O

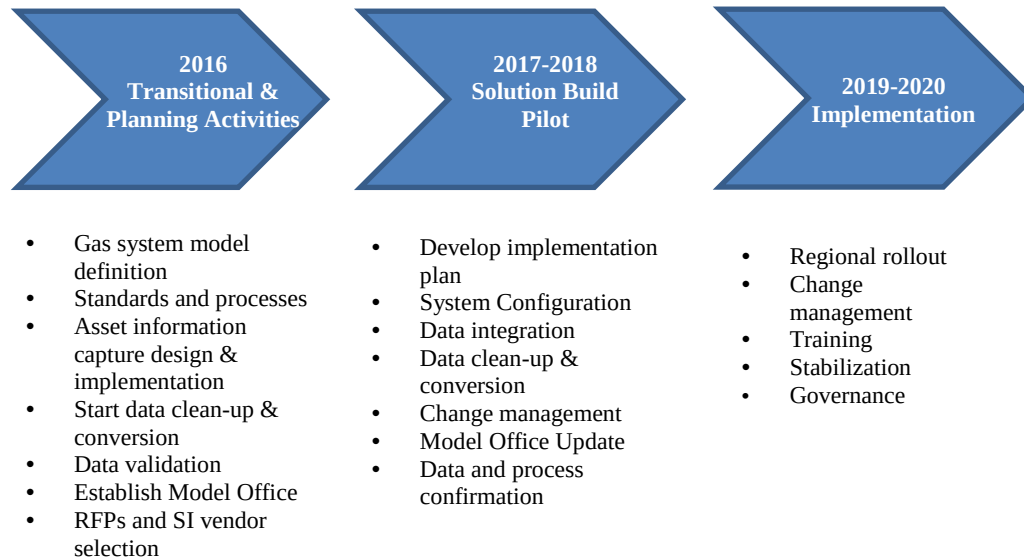
¹⁴⁰ DR 680-O

¹⁴¹ DR 680-O

¹⁴² DR 680-O

Exhibit VII-19

High Level Gas Operations Work and Asset Management Improvement Road Map



Source: DR 724-C Attachment 1

2. Develop formal reports on CECONY and O&R trends in work load levels, workforce productivity and utilization. The analysis of these trends identifies areas that are performing well, where improvements are needed, and is a foundation for the development of strategies to improve work force performance.

3. Establish formal processes to use work management data for annual resource planning as part of the annual business planning activities of CECONY Gas Operations, Substations Operations, Transmission Operations and Steam Plants.

4. Develop formal work management practices for CECONY and O&R engineering organizations. Where possible, leverage the results of CECONY Central Engineering's Continuous Improvement Program. The work management systems should have appropriate system tools to support the various individual and distinct engineering functional processes.
 - Central Engineering should prepare a document which provides an overview of its Continuous Improvement Program to share with engineering management personnel in the other CECONY and O&R operations organizations. The overview should describe the purpose, methodology, and results of each initiative, including the impact on the engineering work processes. Elements that should be included are:
 - Scheduling
 - Prioritization and planning
 - Resource allocation and leveling
 - Performance measurement
 - Budget planning and control
 - Vendor tracking

- Document/drawing control
 - Records management
 - Procurement management
 - Time reporting.
-
- Each engineering organization should form a team to assess whether any of the Central Engineering initiatives would improve its operations, and to identify other opportunities to improve its work processes.
 - Once each engineering organization has identified needed Continuous Improvement Program initiatives, it should meet with members of the Continuous Improvement team to discuss the implementation process and any lessons learned.
5. Develop overtime targets for CECONY and O&R based on economic analyses and verified industry norms.
 6. Develop formal studies and provide updates of contractor versus in-house costs every three to five years, and use the results of these studies in CECONY and O&R resource planning to determine the optimal use of contractors.

VIII. PERFORMANCE MANAGEMENT

This chapter provides the results of NorthStar's review of O&R's performance management processes and systems. Although there are many similarities between the processes at both Utilities, CECONY's performance management was not part of the scope of the detailed performance management review. This chapter does contain the review of CECONY executive management's use of measurable goals to achieve the corporate mission and objectives, taken from Chapter III – Corporate Governance.

A. BACKGROUND

Performance management is an ongoing process that consists of planning, measuring, reviewing, feedback and taking corrective action. Key elements include the development of metrics and associated targets (often termed key performance indicators or "KPIs"), monitoring and reporting, communicating, and designing and implementing an appropriate employee performance review process which links employee objectives and performance targets to achievement of overall corporate goals and objectives. KPIs should be meaningful and appropriately linked to the organization's mission, objectives, and strategic and operational plans as part of a comprehensive process. They should be used to provide early warning of potential performance issues.

Exhibit VIII-1 provides CEI's and O&R's mission vision and values. O&R's mission is consistent with the corporate mission.

Exhibit VIII-1 CEI/O&R Mission, Vision and Values

CEI Mission

To provide energy services to our customers safely, reliably, efficiently, and in an environmentally sound manner; to provide a workplace that allows employees to realize their full potential; to provide a fair return to our investors; and to improve the quality of life in communities we serve.

O&R Mission

To deliver energy services to customers safely, reliably and economically while meeting the needs of our communities, shareholders and employees.

O&R Vision Statement

We provide energy for your future

O&R Vision

O&R is a trusted provider of safe, reliable, clean, innovative, cost-effective energy services and solutions that enhance the lives and businesses of our customers. We focus on the customer experience in all aspects of daily operations.

Source: DR 37-C and 37-O, DR 56-B Supplement 1.

O&R also has the following core values:¹

- **Service** - We will provide the best possible energy service. We will never forget that what we do, and the way we do it, vitally affects the people who depend on our service.
- **Honesty** - We will conduct our business with honesty and integrity, and we will communicate openly.
- **Concern** - We will show concern for the welfare of our customers, our co-workers and those who invest in our company. We will protect the environment in which we live and work.
- **Courtesy** - We will be courteous to our customers, to each other and to all those whose lives we touch.
- **Excellence** - We will strive for excellence in all that we do. We will never be satisfied with less than the highest standards of performance.
- **Teamwork** - We will work together in harmony as a team, combining our best thinking and efforts to realize our Vision and Mission.

Performance measures can be classified as leading or lagging. Leading indicators provide information about the current situation that may affect future performance. Used properly, leading indicators help an organization respond to changing circumstances and take actions to achieve desired or to avoid unwanted outcomes. Lagging indicators measure the outcomes that have resulted from past actions.

It is NorthStar's experience that most utilities use a fairly standard set of performance measures (typically lagging indicators) driven by regulatory requirements and industry standard metrics, such as customer satisfaction survey levels, reliability indices and service call response times. NorthStar has often further found that improvement processes and initiatives may not be adequately tied to or driven by the performance management process.

O&R KPI's

O&R's primary KPIs are those included as part of its Annual Team Incentive Plan (ATIP) program for management personnel. **Exhibit VIII-2** provides the 2015 ATIP KPIs. Many of the targets are regulatory targets established in O&R's rate cases.

Exhibit VIII-2
2015 O&R KPIs

Operating Performance		Target	Associated Regulatory Penalty
1	Safety Index	7 of 8 measures	
2	Environmental Index	4 of 5 measures	
3	Employee Development Index	7 of 8 measures	
4	Customer Experience Index	6 of 7 measures	Selected measures
5	Electric Non-Network System Availability	99.975%	

¹ DR 37-O

Operating Performance		Target	Associated Regulatory Penalty
6	Electric Reliability	System Average Interruption Frequency Index (SAIFI) $\leq$ 1.20 Customer Average Interruption Duration Index (CAIDI) $\leq$ 111 minutes	Yes
7	Storm Scorecard	$\geq$ 90 points	
8	Respond to Gas Odor Complaints	$\geq$ 75% within 30 minutes	Yes
9	Gas Leaks – Workable and Total Inventory	2 of 2	Total Inventory has regulatory penalty
10	Damage Prevention Program	3 of 3	Yes
Financial Performance		Target (EOY)	Associated Regulatory Penalty
1	O&R Net Income	\$61.0 M	
2	O&R Operations and Maintenance (O&M) (Departmental Expenses)	\$194.3 M	
3	O&R Capital	\$162.4 M	
4	O&R Capital Projects	80%	

Source: DR 226-B, Attachment 7, DR 916-O (Confidential)

B. EVALUATIVE CRITERIA

The evaluative criteria were taken from the final work plan and include both the Staff's evaluative criteria from the RFP and those added by NorthStar in its proposal.

- Do CECONY and O&R executive management use measurable goals to achieve the corporate mission and objectives? From Chapter III – Corporate Governance.
- Does O&R have appropriate processes in order to: assess the performance (reliability, productivity, etc.) relative to the corporate mission, objectives and goals; facilitate continuous process improvement; and allow management to redirect resources and change priorities?
- Are KPIs consistent with the corporate mission, objectives, goals and priorities?
- Do operational performance measures provide early warning of potential performance deficiencies and are they appropriately supportive of corporate and company-wide KPIs?
- Are performance goals meaningful and measureable and are targets set in an appropriate manner?
- Does O&R have effective change management and continuous improvement processes?
- Are compensation and performance metrics appropriately linked?

- Is performance reported to management personnel, senior executives and the O&R Board in a meaningful and timely manner and is the information used to address performance issues?
- Are there additional performance measures or indicators that are needed to facilitate the corporate mission, objectives and goals?

C. FINDINGS AND CONCLUSIONS

1. **Both CECONY and O&R executive management use measureable goals to achieve the corporate mission and objectives, consistent with corporate processes and procedures.** (From Chapter III – Corporate Governance)

- CEI has defined procedures for the development and alignment of performance metrics with the corporate mission, vision, goals and strategic objectives. These procedures accurately define the purpose of each element of the performance management process (e.g., mission, vision).² As part of the longer-term planning process, each entity develops a “business plan” which comprises the first five years of the long-term plan.³
- Budgets and business plans are updated each year. Budget and planning guidance is provided in roughly April of each year by Finance. The guidance provides the strategic objectives and other priorities that must be addressed by the business plans.⁴ The objectives generally include operating performance, safety and environmental, reliability, operating efficiency and flexibility, risk mitigation strategies, customer bill impacts and investor returns.⁵ (Additional discussion of the budgeting process is provided in Chapter V – Capital and O&M Budgeting).
- According to the guidance, business plans “are to reflect corporate and business unit missions and visions; cultural imperatives including cost management, fairness, openness, trust and enhanced external relations; and, work performance, safety and environmental goals. The work plan should be followed by proposed measures for the success of the work plan that take the form of key performance indicators.”⁶
- With the 2012 cycle (2013 Business Plan), the utilities were instructed that each organization should develop three to five key five-year metrics to be used to monitor progress in achieving the organization’s long-term business plan objectives as they relate to the Integrated Long Range Plan.⁷ Subsequent guidance provided schedules

² Corporate Policy Statement CEI-001 (DR 196-O)

³ DR 196-O, DR 26-O, DR 38-O

⁴ DR 26

⁵ DR 28-C

⁶ DR 28-C, Attachment 4

⁷ DR 28-C, Attachment 5

for the budget and five-year business plan and financial assumptions, but less discussion of KPIs and linkages.⁸

- CEI’s mission is to “provide energy services to our customers safely, reliably, efficiently, and in an environmentally sound manner; to provide a workplace that allows employees to realize their full potential; to provide a fair return to our investors; and to improve the quality of life in communities we serve.”⁹ **Exhibit VIII-3** shows the alignment between the corporate mission and the utilities’ KPIs. The utilities’ missions are consistent with the CEI mission. Both Utilities use a similar set of corporate KPIs covering operations and financial performance, the primary difference being the inclusion of steam system KPIs for CECONY.¹⁰
- Performance is reviewed by executive management and is presented to the respective Boards. O&R’s performance relative to its KPIs is presented to the O&R Board of Directors and the CEI Board at each meeting. CECONY’s KPI performance is discussed at all of the CEI/CECONY Board meetings.¹¹
- Performance is reviewed by executive management of each utility on a month basis.¹²

Exhibit VIII-3
KPI Alignment – 2014 KPIs – CECONY and O&R [Note 1]

To provide service to our customers	• Calls Answered within 30 Seconds • PSC Complaints • Customer Satisfaction Surveys • Customer Experience Index (O&R)
Safely	• Safety Index • Respond to Gas Odor Complaints • Steam Operation within Normal Pressure (CECONY) • Damage Prevention (O&R) • Leak Prone Pipe Replacement • Gas Leak Backlog
Reliably	• Electric Network and Non-Network System Availability • Electric Reliability Performance Measure – 4 metrics (CECONY), 2 metrics (O&R) • Production Forced Outages – Steam (CECONY) • Storm Scorecard/Index • Storm Hardening/System Resiliency Project (O&R)
Efficiently	• Calls Answered within 30 Seconds • PSC Complaints • Major Capital Projects Completed on Time and w/in Budget (O&R)
And in an environmentally sound manner	• Environmental Index
To provide a workplace that allows employees to realize their full potential	• Employee Development Index
To provide a fair return to our investors	• Net Income • O&M

⁸ DR 164-C, Attachment 3, DR 26-C and 26-O

⁹ DR 37-B

¹⁰ DR 9

¹¹ DRs 8, 43-B, 43-B Supplement, 43-B Supplement 2, 197-B (Confidential) and 575-O (Confidential)

¹² DR 917-O

	• Capital
And to improve the quality of life in communities we serve	• Some of the environmental measures [Note 2]

Source: NorthStar Analysis, DR 9

Note 1: KPIs specific to a utility are so noted.

Note 2: NorthStar finds that this is an area that frequently challenges utilities in terms of KPI development.

2. O&R's KPIs are appropriately developed as part of the overall business planning process and aligned with its mission, vision and strategic objectives.

- The O&R performance management process begins with the development of the annual business plans and budgets. The process begins in the March/April timeframe.¹³ The annual business plans outline O&R's mission, vision and long-term objectives, key initiatives and KPI's for each of the major organizational units: electric, gas, customer, Environmental, Health and Safety (EH&S), Compliance, Public Affairs and Human Resources.¹⁴ The business plans consist of two primary elements:
 - The business focus which outlines the long-term goals/objectives and specific objectives of the organization. **Exhibit VIII-4** provides an example of the business focus from O&R's 2010 Business Plan.¹⁵ The goals and focus have evolved over time, but generally include: reliability, cost/productivity, satisfying customer needs, reducing risk/safety, enhancing external relationships and strengthening human resources.¹⁶ The 2016 Business Plan objectives include: improve employee and public safety; provide reliable service; reduce and manage risk; customer experience; physical and cyber security; operational excellence; compliance and grow new business opportunities.¹⁷ Initiatives are identified for each objective.

Exhibit VIII-4
Business Plan Structure – Business Focus

Goal/Objectives	Initiatives [Note 1]
Reliable Service at Reasonable Cost	• Provide online applications for new service • Implement AMI pilots and related systems • Promote internet payment and e-billing
Stewards of the Environment	• Reduce gas releases to the environment • Continue Polychlorinated biphenyls (PCB) transformer removal program
Enhance External Relationships	• Local elected officials • Health and Human Services Agencies
Strengthen Support Activities	• Improve call-out and event notification processes • Strengthen field oversight and Quality Assurance (QA) assessment
Strengthen Human Resources	• Implement strategic sourcing to recruit diverse and qualified candidates

¹³ IR 82 and 88, IR 42

¹⁴ IR 42, DR 38-O

¹⁵ 2010 was selected for the ease of the reader as it provided a clear, straightforward presentation.

¹⁶ 2010-2015 Business Plans, DR 38-O, Attachments 1-5.

¹⁷ DR 688-O, Attachment 4 Confidential Response

Goal/Objectives	Initiatives [Note 1]
	Use workforce planning model to identify and plan for staffing needs consistent with vision

Note 1: Selected actual examples provided. List is not comprehensive.

Source: DR 38-O, Attachment 1

- Detailed business plans by organization and associated KPIs. In the June draft, each organization provides its KPI status, introduces any new KPIs and provides five-year targets for selected KPIs, which are intended to drive performance to that level over five years.¹⁸ The detailed business plans are reviewed by the head of Operations, Customer Service and Shared Services and then by the President of O&R. Year-end results for all KPIs are reported as part of the next year's business plan.
- Department-level plans are combined into a commodity roll-up (i.e., electric, gas, customer, EH&S, Compliance, Public Affairs, Human Resources).¹⁹ The commodity roll-ups provide details of specific projects/activities to be performed during the year. Each has between 1 and 3 dozen associated KPIs. A subset of the KPIs are used for corporate reporting and the ATIP program (previously provided in **Exhibit VII-3**); the remainder are tracked and reviewed by the respective organizations.²⁰ Which KPIs will become ATIP KPIs is determined by O&R's Corporate Policy Committee (CPC).²¹
- In August 2012, O&R developed an expanded vision (5-10 years) outlining the needs of the various stakeholders (customers, investors, communities, public officials, and employees) and how to get there.²² O&R's detailed vision for operations is to:
 - Effectively respond to storms and other emergencies;
 - Deliver excellent safety performance;
 - Focus on operational excellence, continuous process improvement, capital efficiency, and cost management;
 - Focus on employee development;
 - Environmental stewardship;
 - Adopt and deploy new technology to drive higher performance; and,
 - Develop a broader focus on building a competitive mindset to deliver shareholder value.²³
- As part of the KPI reporting process, O&R also reports on the status of its major capital projects, the gas main replacement program, and its storm hardening projects.²⁴ The majority of the above vision items are reflected in the ATIP goals or

¹⁸ IR 82 and 88

¹⁹ IR 42, DR 38-O

²⁰ DR 38-O, DR 9-O, IR 42

²¹ IR 82 and 88, DR 306-O

²² DR 37-O

²³ DR 37-O Attachment 1

²⁴ DR 226-B, Attachment 7

the major projects. These projects vary by year to reflect the successful completion of the project and new project priorities.²⁵

- Each annual business plan shows the alignment between the key drivers/areas of focus, the strategic initiatives, the specific programs, projects and processes supporting the initiatives and the measures for tracking success.²⁶ **Exhibit VIII-5** (page following) taken from the 2015 Business Plan shows the alignment between O&R's vision, objectives and the five-year KPIs.

²⁵ DRs 9 and 38-O

²⁶ DR 38-O, Attachments 1-5

Exhibit VIII-5
O&R KPI Alignment – 2015 Business Plan – Selected Objectives

Objective	Key Initiatives	2015 Five Year Metrics
Improve Safety	• Root cause analysis in all accident/ injury & Close Call investigations • Implement enhanced Close Call Program • Proactivity ergonomic training • Enhanced Job-Briefing Requirements • Evaluate and implement driver training programs • Human Performance Initiative	• Achieve and Maintain a Total Case Incident Rate (TCIR) of 1.0 by 2019
Improve Public Safety	• Accelerate leak reduction backlog • Accelerate removal of cast iron • Increase damage prevention initiatives • Improved communications regarding gas odor reporting • Storm Plan / Site Safety process enhancements • Accelerate replacement of bare steel services	• One year rolling backlog • Remove 10,000 ft. of cast iron per year less than 5 miles remaining after 2019 • Rank in the top half of NY utilities in 5 yrs. for damage improvement • Implement all NEGAS collaborative recommendations • Implement Outage Management System (OMS) Enhancements by 4Q 2014/ Implement PSC Scorecard • Replace 500 bare steel services per year (in 10 years remove all bare steel services)
Provide Reliable Service	• Improve customer reliability through the implementation of appropriate capital investment, targeted O&M programs, and expanded use of new technologies • Continue to Expand Central Rockland smart grid area to defer Central Rockland Substation • Complete West Point Automation to improve contingencies for Lines 841/851 until permanent solution is constructed • Implement the O&R Gas Mobile Dispatch Meter Order Project	• Improve SAIFI and System Average Interruption Duration Index (SAIDI) targets (as listed below) by 17% by 2019, while maintaining CAIDI: SAIFI $\leq$ 1.00, CAIDI $\leq$ 111, SAIDI $\leq$ 111 • Complete identified projects as scheduled and within appropriation level • Automate paper meter orders in Gas Service by 2016
Reduce and Manage Risk	• Improve electric delivery system availability and resiliency during storms/events through storm hardening projects and programs and enhanced inventory of critical system components • Commence and make substantial progress on NY and NJ major overhead (OH) and underground (UG) storm hardening projects	• Storm harden 10 miles of distribution infrastructure by 2019 • Complete identified projects as scheduled and within appropriation constraints

Objective	Key Initiatives	2015 Five Year Metrics
	- Complete the Mercedes Drive UG storm hardening project in New Jersey (NJ) - Commence and make substantial progress on the following SH projects in NJ - Ringwood 3rd UG circuit exit - West Milford UG sections of Circuits 2 & 5	Develop formalized benefit analysis to prioritize storm hardening projects and programs by 12/2015.
Customer Experience	NYPSC REV proceeding – Company Initiatives - Complete photovoltaic penetration system impact studies - Update Demand Response (DR)/Distributed Generation (DG) cost modeling analysis tools / training - Participate in regulatory proceedings / industry meetings - Identify / develop plans for targeted areas to potentially defer high cost infrastructure investment - Pomona Substation Infrastructure Deferral Plan Excellence Team Initiatives - Call customer in advance of appointments or re-checks - Implement reverse Voice Response Unit (VRU) for construction in the area - Identify customer experience enhancements Enhance Customer Experience - Improve OMS infrastructure and processes to support the needs of the business. - Develop eLearning modules to facilitate training on all new systems and enhancement - Enhance automated customer communication - Develop customer account Mobile APP - Provide customers a communication preference management tool - Enhance Company website - Enhance ROPES to receive municipal road paving plans and arrange municipal adoption of this technology	- Complete by 1Q 2015 - Complete by 3Q 2015 - Ongoing as required - Identify areas / potential options by 4Q 2015 - Propose project and recovery mechanism in 2014 NY Electric rate filing - Develop and implement the listed enhancements by 2015 – 2016 - Complete development of tool and achieve 100% adoption of ROPES users by 2019
Physical and Cyber Security	- Physical Security and Spare Equipment Initiative - Install the Corporate Data Network at five existing substations that have physical security systems installed but no presence of the Corporate Data Network	Receive all major equipment as scheduled by year through 2019

Objective	Key Initiatives	2015 Five Year Metrics
	- Enterprise Security Suite Tappan Gas Gate Station Security - Meet NERC CIP v5 and v14 requirements - Cyber Security – Implement network segmentation - Cyber Security – Implement database and web application protection - Implement Island Net for Electric Control Centers	- Be CIP v5 compliant by 2Q 2016 Updated Annually Deploy at all company locations with card access and prioritize other company facilities per installation Install security fencing, preparing LAN infrastructure and raising security equipment - Cyber Security Index KPI - 50% in 2014 100% in 2015 - Cyber Security Index KPI - Complete upgrade in 2015
Operational Excellence	- Expand Bulk Power Operator training program to include use of QTS evaluation - Develop and implement change management system for ECC and SS critical BES systems - Self-Assessment - Expand Diversity and Inclusion Awareness Initiatives - Human Performance Initiative - Training	- Complete by 2Q 2016 - Fully compliant by 2Q 2016 - Implement by 2Q 2016 - Job Fairs / Multi-Cultural Advisory Committee - Identify gaps in training and make recommendations on closing gaps by 4Q 2014

Source: Business Plan 2015, 2015-2019 Budget (DR 38-O, Attachment 5 - CONFIDENTIAL)

3. Compensation and performance metrics are linked in a manner fairly typical of the industry.

- Performance targets tied to compensation should drive performance, but must be realistic and attainable and they should be in alignment with a corporation's real challenges and objectives. Management personnel should have a clear understanding of how corporate objectives and KPIs relate to their compensation.
- Achievement of KPI's is a factor in O&R's ATIP program for management personnel.²⁷ The objective of O&R's Management Compensation Program is to:
 - Establish a team-based Compensation System that includes base pay and variable pay.
 - Establish base salaries that are competitive with the market or pay practices of the general industry (not specific to the utility market) in the northeast region and, in some cases, nationally. Annual base pay is generally targeted at the 50th percentile.
 - Provide a strong and direct link between compensation and company performance on behalf of its shareholders and customers.²⁸
- All full- and part-time O&R management employees (except the President of O&R which is explained below) are eligible for participation in the ATIP. Under ATIP, a portion of employees' compensation opportunities are based on O&R's performance relative to the KPIs and a portion based on individual performance.
- Achievement of the ATIP operating and financial targets determines the amount of variable pay available to eligible O&R employees.²⁹ Operating KPIs account for 50 percent of the target compensation pool; achievement of budget and net income targets account for 25 percent each.
- ATIP target compensation opportunities are tied to pay bands. They are expressed as a percentage of annual base salary, and are split between a fixed, team-based component (60 percent) and a variable, individual component (40 percent). All eligible employees receive the "team" component. The individual compensation portion can vary from 0 to 150 percent of guidelines to recognize significant individual contributions.³⁰ An employee who receives an unsatisfactory review is not eligible for the variable compensation.
- **Exhibit VIII-6** provides the ATIP targets for each salary band. Targets range from 5 percent to 25 percent. Most employees are in the 6 to 7 percent range.³¹

²⁷ DR 48-B

²⁸ Policy Number 2.25 (DR 551-B Attachment 3)

²⁹ DR 253-B, Attachment 3

³⁰ Policy Number 2.25 (DR 551-B Attachment 3)

³¹ DR 253-B, Attachment 4, DR 912-O

Exhibit VIII-6
ATIP Targets by Salary Band

Salary Band	Number of Employees	ATIP Target (Percent of Salary)
SL, SH, SE, EP	10	5%
1L, 1H	177	6%
2L	174	7%
2H	88	9%
3L, 3H	57	15%
4L	6	21%
4H	2	25%

Source: DR 912-O.

- O&R does not employ the use of simple minimums, targets, or maximums, as many other utilities do. Payouts for operating, budget and net income performance are scaled between 0 to 120 percent of target in each category (see **Exhibit VIII-7**). As a result, it is possible to receive an amount greater than 100 percent of the target amount.³² In 2014, the amount earned totaled 109.8 percent: 26 percent earnings, 28.8 percent operating budget and 55 percent operating KPIs.³³ **Exhibit VIII-7** provides the scaling for 2014:

Exhibit VIII-7
ATIP Compensation Scaling

Award	Operating Indicators	O&R Budget	O&R Net Income (NI)
120%	12 of 12	≥1.25% below budget	≥10.0% over NI Target
115%		0.94% below budget	≥7.5% over NI Target
110%	11 of 12	≥.75% below budget	≥5.0% over NI Target
105%			≥2.5% over NI Target
103.8%			1.9% over NI Target
100%	10 of 12 (Target)	Target	Target
90%	9 of 12		>2.5% below NI Target
80%	8 of 12	≤1.25% over budget	>5.0% below NI Target
70%	7 of 12		>7.5% below NI Target
60%		≤2.50% over budget	>10.0% below NI Target
50%			>12.5% below NI Target
40%		≤3.75% over budget	
20%		≤5.00% over budget	
0%	6 or less of 12	≤6.25% over budget	≥12.5% below NI Target

Note: Actual achievement is highlighted in green.

Source: DR 253-B, Attachment 4

³² DR 253-B, Attachment 4, DR 229-B Supplement, Attachment 1

³³ DR 229-B Supplement, Attachment 1

- The attainment of annual ATIP goals and associated payouts is audited annually at the request of the O&R CPC. O&R's CPC comprises the President and his direct reports. In general, the role of the CPC is to: develop and execute the corporate strategy and ensure the strategy is aligned with the corporate values, mission, and vision; to act as a forum for the identification and discussion that may affect corporate goals, objectives, and policies; and, to decide on plans of action to address current and long-range issues facing O&R.³⁴
 - Financial results are taken from the books and records of O&R and are included in the CEI consolidated financial results; as a result, these are accepted as verified.
 - Various methods are employed to verify the reported KPI operating results, including sampling supporting data, reviewing and verifying worksheets and statistical reports and analyzing trends to ascertain reasonableness.³⁵
- The President and Chief Executive Officer (CEO) of O&R participates in the Executive Incentive Plan (EIP), and as such is eligible to receive an annual incentive based on achievement of regulated net income (50 percent), financial performance (20 percent) and the achievement of performance indicator goals (30 percent).³⁶ Effective January 1, 2015, regulated net income performance for the President and CEO of O&R will be weighted 80 percent on the O&R adjusted net income payout percentage and 20 percent on the CECONY adjusted net income payout percentage.³⁷ The actual weight in each area can vary from 0 to 200 percent and is used to determine the Incentive Fund.³⁸ The weightings are determined by the CEI MD&C Committee of the Board of Directors.³⁹ Effective 2015, the maximum for the performance indicator goal (30 percent) was reduced from 200 percent to 175 percent.⁴⁰ Budget results are modified based on the achievement of certain productivity measures.
- O&R union personnel are not eligible for ATIP.⁴¹

4. Performance is reported to management personnel, senior executives and the CEI and O&R Boards in a meaningful and timely manner to allow performance issues to be addressed. The Boards are actively involved in the KPI process.

- On a monthly basis the CEI Board receives KPI dashboards which provide the target, YTD performance and the year-end projection for CECONY's and O&R's financial and operating performance. Progress against the indices is reported rather than the

³⁴ DR 306-O

³⁵ February 3, 2015, "Verification of 2014 Orange and Rockland's Annual Team Incentive Plan (ATIP) Goals" (DR 229-B Supplement, Attachment 1), IR 82 and 88

³⁶ DR 253-B, Attachment 5

³⁷ Amendment 6 to the CEI 2005 EIP (DR 253-B, Supp. 1)

³⁸ DR 253-B, Attachment 5, Amendment 3

³⁹ DR 253-B, Attachment 5

⁴⁰ 2015 Proxy Statement, <http://investor.conedison.com/phoenix.zhtml?c=61493&p=irol-proxy>

⁴¹ IR 42

individual measures. The Board is also provided with a glossary explaining the metrics.⁴² The President of each utility presents the results and discusses the causes for any deviations.⁴³

- Drivers for budget variations are also provided at the CEI Board meetings as well as total spending on major capital projects and various analyst reports.
- The O&R Board reviews the operating and financial performance results at each meeting.⁴⁴ Goals for the upcoming year are presented to the Board for review in November and approval in January. Preliminary results are also presented at the November meeting. The Board is actively involved in these discussions.⁴⁵ At the January 2015 meeting, the Board suggested adding several additional goals prior to approval of the full set of goals.⁴⁶ In its February meeting following the ATIP audit, the O&R Board approved the ATIP performance level.⁴⁷
- The Management Development and Compensation (MD&C) Committee of the CEI Board reviews, and potentially proposes changes or additions to, and approves the utilities' proposed KPI targets.⁴⁸ In February, the MD&C Committee reviews and approves the KPI results, which provides the basis for the compensation of the CEO, Officers and other management personnel, and approves the associated payouts.⁴⁹
- The O&R Board is responsible for approval of the corporate performance criteria, the employee variable compensation targets and the ATIP payment at the close of the plan year. The Board of Directors may, at its discretion and in consultation with the CEO, adjust ATIP compensation plus or minus 25 percent to reflect strategic and other factors affecting business operations and results. The Board may also make other adjustments it deems appropriate, based on a participant's performance.⁵⁰ There have been no instances in which the Board has adjusted the ATIP payout in the last five years.⁵¹

5. Performance goals are set based on historical trends, regulatory requirements, current areas of focus, or desired performance improvements; however, many targets could be more aggressive and certain measures should be re-visited.

- As shown in **Exhibit VIII-8**, all of O&R's KPIs are measureable.

⁴² DR 8-C, IR 82 and 88

⁴³ DR 8-O, 43-O (both Confidential)

⁴⁴ DR 197-B (Confidential), IR 82 and 88, DR 43-O, 575-O, 43-B Supplement 2 (all Confidential)

⁴⁵ IR 42, Review of Board Meeting Minutes

⁴⁶ Review of Board meeting minutes (DR 43-O - Confidential)

⁴⁷ Review of Board meeting minutes (DR 43-O - Confidential)

⁴⁸ Board Meeting Minutes (DR 43-B) Confidential, DR 888-C (Confidential)

⁴⁹ DR 888-C, DR 43 Supplement (Confidential)

⁵⁰ Policy Number 2.25 (DR 551-B Attachment 3), DR 253-B, Attachment 3, review of Board materials.

⁵¹ DR 913-O

Exhibit VIII-8
2015 O&R KPI Detail

KPI	Sub-Measures	Target
Operating		
Safety Index (Achieve 7 of 8 measures – 87.5%) Employee Occupational Safety and Health Administration (OSHA) Incidence Rate must be met.	- Employee OSHA Incidence Rate - Contractor OSHA Incidence Rate - Significant High Hazard Injuries - Motor Vehicle Collisions - System Safety-Operating Errors - Safety Strategy/Work Process Improvement - Field Safety Inspections/Observations - Contractor Safety Inspections	≤ 2.00 ≤ 2.00 0 ≤ 49 ≤ 9 ≥ 10 $\geq 2,200$ ≥ 750
Environmental Index (Achieve 4 of 5 measures – 80.0%)	- Notice of Violation (NOV) - PCB Contaminated Transformers - EHS Site/Facility Assessments - Environmental System Improvements - Tagging Dielectric Feeders with Perfluorocarbon Tracers	≤ 1 ≥ 35 dist. ≥ 100 ≥ 4 2 of 6
Employee Development Index (Achieve 7 of 8 measures – 87.5%)	- Number of Mentees in Mentoring Programs - Number of E-Learning Courses Developed - Employees Passing Written Promotional Exam upon Completion of Career Path Training. - Completion of Leadership Training - Time to Fill – From Approval of Requisition to Candidate Acceptance with an Established Start Date - Complete Business Competency Training - Participate in Diversity Job Fairs and Events - Expand Diversity and Inclusion Awareness	≥ 6 mentors/mentees ≥ 6 classes 90% [Note 2] ≥ 75 90% w/in 90 days ≥ 60 employees ≥ 3 events ≥ 4 corporate events/initiatives
Customer Experience Index (Achieve 6 of 7 measures – 85.7%)	- Percent of Calls Answered by a Customer Service Representative (CSR) within 30 seconds - Percent of adjusted bills - Transactional Survey - Customers Satisfied or Very Satisfied - Process Customer Service Applications within 5 business days - Complete Commercial and Industrial Customer Visits - Appointments Kept - Escalated PSC Complaints per 100,000 Customer	$\geq 74\%$ $<2.42\%$ [Note 1] $> 89\%$ [Note 1] $\geq 95\%$ ≥ 100 $\geq 95\%$ ≤ 1.8 [Note 1]
Electric Reliability [Note 1] (Achieve 2 of 2 measures)	- Non-Network – SAIFI - Non-Network – CAIDI	≤ 1.2 1.85 hours (111 min)
Gas Odor [Note 1]	Respond to Gas Odor Complaints within 30 minutes	$\geq 75\%$
Leak Backlog [Note 1] (2 of 2 measures)	Total Gas Leak Year End Inventory Workable Gas Leak Year End Inventory	≤ 700 ≤ 18
Storm Scorecard (Scorecard Index)	All Category 2 Storms and Above	≥ 90 out of 100
Damage Prevention Program [Note 1] (3 of 3 measures)	- Overall damages (per 1,000 One Call Tickets) - Damages due to Mismarks (per 1,000 One Call Tickets) - Damages due to Company/Company Contractors (per 1,000 Tickets)	≤ 3.75 damages ≤ 0.45 damages ≤ 0.25 damages
Major Projects		
Gas Main Replacement [Note 1]	Replace leak prone pipe main	90,000 ft.
Storm Hardening/ System Resiliency	- Complete Mercedes Drive Storm Underground Hardening - Complete Central Rockland NYSEDA Project: automate 6 circuits with undergrounding of circuit on Montebello Rd - Complete West Point Automation - Complete Highland Mills Route 32 Completion	In Service On Schedule/ On Budget

KPI	Sub-Measures	Target
Major Capital Projects	1. Completion of Blue Lake Civil System 2. Completion of Outage Dashboard Phase I 3. Establishment and Initial Inventory of two physical security equipment storage yards and required equipment procurement 4. Install Sulfur Analyzer at Suffern Gate Station 5. Completion of Summit Ave Civil System and required equipment procurement action	In Service On Schedule/ On Budget
Financial		
Net Income	Net Income	\$61 million
O&M Budget	O&M	\$194.3 million
Capital Budget	Capital	\$162.4 million

Source: DR 226-B, Attachment 7, DR 8-C, DR 916-O (Confidential)

Note 1: PSC Penalty

Note 2: Referred to as LEAD Program

Note 3: Does not include REV, AMI, and Indian Point 2 mitigation project

- KPIs and associated targets are established during the budget and business planning process, generally based on historical trends. As part of the business plan, each organization develops KPIs to monitor performance.⁵² For a limited number of metrics – primarily safety and reliability - the targets vary annually to achieve a desired performance improvement over time.⁵³ The majority of the targets remain the same over the five-year period which does not promote continuous improvement where possible.
 - A number of the targets are established by rate case or other regulatory requirement, and may or may not be aggressive.⁵⁴ These include: SAIFI, CAIDI, response to gas odor complaints, workable gas leaks and gas leak backlog, customer satisfaction survey, PSC complaints, calls answered within 30 seconds (no associated regulatory penalty), the three damage prevention program KPIs, and the gas main replacement program.⁵⁵ O&R typically does not alter the regulatory targets.⁵⁶
 - Over the last four to five years only the safety measures have changed significantly as shown in **Exhibit VIII-9**.
 - The milestone-related KPIs (capital projects) change annually.⁵⁷
- O&R (and CECONY) do not need to achieve the targets for all of the measures within an index. The utilities must hit seven of the eight, six of seven or four of five. For safety, the employee OSHA incidence rate measure must be one of the seven.
- According to O&R, all KPIs are reviewed on an annual basis to confirm continued alignment and applicability; however, there has been limited change to the metrics.⁵⁸ (**See Exhibit VIII-9**). While stability of metrics over time allows for trending, care

⁵² DR 196-O, DR 9.

⁵³ IR 74, review of KPIs

⁵⁴ DR 9, DR 19, DR 38-O

⁵⁵ DR 226-B, Attachment 7

⁵⁶ IR 42, DR 9B

⁵⁷ DR 9

⁵⁸ IR 20, Review of KPIs (DR 9 and 226-B, Attachment 7)

must be taken to assure metrics and goals reflect changes in operations, technology, priorities and numerous other factors.

Exhibit VIII-9
O&R Operational (Customer Service) KPIs and Targets 2011-2015

Index/Measures	2011	2012	2013	2014	2015
Safety Index					
1. Employee OSHA Incidence Rate	4.42	3.54	3	2.5	2.00
2. Contractor OSHA Incidence Rate			3	2.5	2.00
3. Significant High Hazard Injuries	0	0	0	0	0
4. Motor Vehicle Collisions	40	40	40	36	49
5. System Safety-Operating Errors	26	20	17	15	9
6. Safety Strategy/Work Process Improvement	8	10	10	10	10
7. Field Safety Inspections/Observations	2,050	2,200	2,200	2,200	2,200
8. Contractor Safety Inspections	300	400	400	400	750
Environmental Index					
1. Notice of Violation	1	1	1	1	1
2. PCB Contaminated Transformers	50	50	50	50	35 dist.
3. EHS Site/Facility Assessments	80	85	85	100	100
4. Environmental System Improvements	4	4	4	4	4
5. Tagging Dielectric Feeders with Perfluorocarbon Tracers					2 of 6
Number of Oil Spills	143	195	195	195	
Employee Development Index					
1. Number of Mentors or Mentees in Mentoring Programs	3	6	6	6	6
2. Number of E-Learning Courses Developed	3	3	3	3	6
3. Employees Passing Written Promotional Exam upon Completion of Career Path Training.					90%
4. Completion of Leadership Training			20	25	75
5. Time to Fill Requisition (w/in 90 days)					90%
6. Employees Completing Business Competency Training			45	45	60
7. Participate in Diversity Job Fairs and Events			3	3	3
8. Expand Diversity and Inclusion Awareness Events				4	4
Managers Completing Leadership Challenge	15	15			
Students Completing Leadership Training	50	50			
Project Management Training	30	15			
Customer Experience Index					
1. Percent of Calls Answered by a CSR w/in 30 seconds	74	74	74	74	74%
2. Percent of Adjusted bills		2.42	2.42	2.42	2.42%
3. Customers Satisfied/Very Satisfied	6.99/6.73	6.99/6.73	89	89	89%
4. Process Customer Service Applications w/in 5 business days			95% w/in 6 bu. days	95% w/in 6 bu. days	95%
5. Complete Commercial and Industrial Customer Visits			100	100	100
6. Appointments Kept				95	95%
7. Escalated PSC Complaints per 100,000 Customer	2.5/1.8	1.8	1.8	1.8	1.8
Respond to Written Correspondence w/in 5 bus. Days	92				
Respond to Internet Inquiries w/in 24 hours	92				
Electric Reliability					
Non-Network – SAIFI	1.2	1.2	1.2	1.2	1.2
Non-Network –CAIDI (minutes)	107.8	111	111	111	111
SAIDI	123.4				
Gas Odor Complaints					
Respond to Gas Odor Complaints within 30 minutes	75	75	75	75	75%
Leak Backlog					
Total Gas Leak Year End Inventory	950	850	850	700	700
Workable Gas Leak Year End Inventory	21	18	18	18	18
Storm Scorecard					
All Category 2 Storms and Above (out of 100)	100	87	90	90	90

Index/Measures	2011	2012	2013	2014	2015
Damage Prevention Program (per 1,000 One Call Tickets)					
Overall damages	4.25	3.75	3.75	3.75	3.75
Damages due to Mismarks	0.525	0.45	0.45	0.45	0.45
Damages due to Company/Company Contractors	0.40	0.25	0.25	0.25	0.25

Source: DR 9-B Attachments 8-11, DR 912-O

- NorthStar believes better alignment of the Employee Development Index (outlined in **Exhibit VIII-8**) is possible. Many of the metrics could be considered an evaluation of the effectiveness of the Human Resources function rather than ensuring a skilled, engaged work force.⁵⁹
- O&R generally hits the KPI operating targets. Targets were hit in 2011, 2012, 2013 (with the exception of the storm scorecard), and 2014.⁶⁰ Payouts have exceeded 100 percent in each of the last five years as shown in **Exhibit VIII-10**.

Exhibit VIII-10 O&R ATIP Payouts

Performance Period	Payout Date	Payout
2010	2011	110.0%
2011	2012	115.0%
2012	2013	120.0%
2013	2014	114.8%
2014	2015	109.8%

Source: DR 914-O

- 2015 KPI results will not be verified until February 2016, but it is NorthStar's understanding that O&R may be at risk of missing the safety (OSHA Recordable Injuries) and CAIDI reliability targets.⁶¹
 - The 2016 Business Plan should include new five-year targets.⁶² NorthStar has not seen these.
- 6. Many of O&R and CECONY's KPIs are indices creating a less direct line of sight between the KPI and the drivers behind performance. Additionally, KPI performance information is only made available to employees on a quarterly basis.**
- For 2015, six of O&R's 13 operating KPIs were either indices or a scorecard as shown in **Exhibit VIII-8**. Six of CECONY's 14 operating KPIs are indices. In total there are about 40 individual measures.⁶³

⁵⁹ NorthStar Analysis, review of KPIs, IR 42

⁶⁰ DR 9, Attachments 8-11

⁶¹ DR 899-O (Confidential)

⁶² IR 42

⁶³ DR 9-B, Attachments 7-11

- NorthStar believes it is important for the workforce to understand the drivers of performance; however, as the KPIs are not tied to the compensation of the rank and file employee, it is not as critical that they understand each individual measure.
 - According to O&R, KPIs are intended to motivate the management employees, who in turn encourage the workforce. NorthStar has not been able to confirm (or not confirm) that the O&R management employees most affected by the index KPIs understand each of the drivers behind the measures.⁶⁴
 - KPIs are reviewed and discussed with O&R management on a quarterly, rather than monthly basis. Results are presented quarterly at the O&R President's Update Meeting, which is open to O&R management and Shared Service employees.⁶⁵ The results presentations are then posted to the O&R intranet.⁶⁶ Financial results are reported on O&R's intranet site on a monthly basis; ATIP operating measures are posted to the intranet site on a quarterly basis.⁶⁷
 - The ATIP dashboards could be more prevalently located on the O&R intranet site.⁶⁸
- 7. In addition to the KPIs, O&R uses a variety of measures to monitor its operations and performance. This information is reported to the respective organizations on a daily, weekly or monthly basis depending on needs and includes employee-level performance data for applicable functions.**
- In addition to the ATIP KPIs, O&R's Customer Service organization has annual goals for such items as response to customer inquiries (written and internet), completed field collections stops, net loss, A/R balances, safety of field operations, electric service inspections and installation, number of retail choice outreach and education events, and energy efficiency program MWh.⁶⁹ Targets changed little between 2014 and 2015.⁷⁰
 - O&R's Operations organization tracks "Areas of Focus" which are assigned to individuals within the organization for tracking purposes. The Areas of Focus include the ATIP KPIs as well as additional performance measures such as stray voltage mitigation, improve job site productivity, field customer satisfaction, reduction in recurring outages, full CIP compliance, no operating/financial control exposures, improve auto loop reliability, review and standardize construction payment practices, achieve on-time scheduling, and reduce overtime expenses.⁷¹

⁶⁴ IRs 39,40,42, 74

⁶⁵ DR 917-O

⁶⁶ IR 82 and 88, Interview in lieu of DR 305, DR 917-O

⁶⁷ Intranet site demo in lieu of DR 305, DR 916-O (Confidential)

⁶⁸ Intranet Demo in lieu of DR 305

⁶⁹ DR 206-O

⁷⁰ DR 778-O

⁷¹ DR 304-O

8. O&R does not have an overarching performance improvement program. Improvement is driven through a variety of initiatives.

- O&R does not have a dedicated business process improvement group.⁷² Currently there are three O&R process excellence teams: Customer Excellence (which resulted in the development of six to eight key initiatives including company-wide Enhancing Customer Relationships training); an Open and Transparent Workplace Excellence Team; and a Human Performance Improvement (HPI) Excellence Team, designed to minimize human error and prevent serious events.⁷³
- O&R has a number of Quality Assurance personnel embedded within the various organizational units.⁷⁴
- With the 2014 Business Plan, O&R introduced five-year targets for some KPIs to drive performance improvement. Examples include: increase collections recoveries by 15 percent over five years; reduce SAIFI and SAIDI targets 17 percent by 2018, while maintaining CAIDI; and complete 10 of the major infrastructure projects in the 2014-2018 work plan on budget and by the required in-service dates.⁷⁵ Not all of these are ATIP KPIs.
- The 2015 Business Plan also included a number of five-year performance targets, previously provided in **Exhibit VIII-5**. Again, these are not necessarily ATIP KPIs.
- The 2014 Business Plan identified a number of quantified cost saving and business process improvements. The 2015 Business Plan provided an update on the 2014 Business Plan cost saving and process improvement initiatives and some additional improvements for 2015.⁷⁶

9. O&R has appropriately incorporated leading indicators in its mix of KPIs, as shown in Exhibit VIII-11.

Exhibit VIII-11
Leading versus Lagging Indicators [Note 1]

KPI	Sub-Measures	Metric Type
Operating		
Safety Index (Achieve 7 of 8 measures. Employee OSHA Incidence Rate must be met.)	1. Employee OSHA Incidence Rate	Lagging
	2. Contractor OSHA Incidence Rate	Lagging
	3. Significant High Hazard Injuries	Lagging
	4. Motor Vehicle Collisions	Lagging
	5. System Safety-Operating Errors	Lagging
	6. Safety Strategy/Work Process Improvement	Leading

⁷² IR 19

⁷³ IR 74, DRs 360, 361-O, and 778-O

⁷⁴ DR 361-O

⁷⁵ DR 38-O Attachment 4 and DR 304-O

⁷⁶ DR 38-O Attachment 5

KPI	Sub-Measures	Metric Type
	7. Field Safety Inspections/Observations	Leading
	8. Contractor Safety Inspections	Leading
Environmental Index (Achieve 4 of 5 measures)	1. Notice of Violation 2. PCB Contaminated Transformers 3. EHS Site/Facility Assessments 4. Environmental System Improvements 5. Tagging Dielectric Feeders with Perfluorocarbon Tracers	Leading Leading Leading Leading Lagging
Employee Development Index (Achieve 7 of 8 measures)	1. Number of Mentors/Mentees in Mentoring Programs 2. Number of E-Learning Courses Developed 3. Employees Passing Written Promotional Exam upon Completion of Career Path Training. 4. Completion of Leadership Training 5. Time to Fill Positions 6. Complete Business Competency Training 7. Participate in Diversity Job Fairs and Events 8. Expand Diversity and Inclusion Awareness	Target too low Indeterminate Lagging Leading Lagging Leading Leading Leading
Customer Experience (Achieve 6 of 7 measures)	1. Percent of Calls Answered by a CSR within 30 seconds 2. Percent of Adjusted Bills 3. Transactional Survey - Customers Satisfied or Very Satisfied 4. Process Customer Service Applications within 5 business days 5. Complete Commercial and Industrial Customer Visits 6. Appointments Kept 7. Escalated PSC Complaints per 100,000 Customer	Leading Leading Lagging Leading Leading Lagging Lagging
Electric System Availability	Electric Non-Network System Availability	Lagging
Electric Reliability (Achieve 2 of 2 measures)	1. Non-Network – SAIFI 2. Non-Network – CAIDI	Lagging Lagging
Gas Odor	Respond to Gas Odor Complaints within 30 minutes	Leading
Leak Backlog (Achieve 2 of 2 measures)	Total Gas Leak Year End Inventory Workable Gas Leak Year End Inventory	Leading Leading
Storm Scorecard (Scorecard Index)	All Category 2 Storms and Above	Lagging
Damage Prevention Program (Achieve 3 of 3 measures)	1. Overall damages (per 1,000 One Call Tickets) 2. Damages due to Mismarks (per 1,000 One Call Tickets) 3. Damages due to Company/Company Contractors (per 1,000 One Call Tickets)	Leading/Lagging
Financial		
Net Income	Net Income	Lagging
O&M Budget	O&M	Leading
Capital Budget	Capital	Leading

Source: NorthStar Analysis

Note 1: General assessment. Some lagging indicators may be leading indicators in another area.

D. RECOMMENDATIONS

1. Modify the O&R performance management process as follows:

- Modify the employee development KPIs to be more reflective of the employee development objective, rather than an evaluation of Human Resources.
- Establish more aggressive ATIP KPIs targets that are realistic, but not too easily attainable.

- Targets that are hit every year may have become part of stable ongoing operations and could continue to be monitored but be replaced with new ATIP targets intended to drive improvement. As an example call answer service levels might continue to be reported as a regulatory requirement, but be replaced with first call resolution targets for ATIP purposes.
- Increase the number of ATIP KPIs with five year targets intended to drive performance improvement and increase alignment with the business plan. Currently OSHA incidence rate is the primary one. Potential candidates include: OSHA incidence rates, motor vehicle accidents, safety process improvements, environmental system improvements, reliability, damages, leak backlogs.
- O&R could establish stretch goals for individual targets which would then determine whether the total variable pay award exceeds 100 percent rather than the current method which based on how many operating indicators are hit. (This is just one option.)
- In determining which KPIs should have more aggressive targets, O&R should perform cost-benefit analyses (as it currently does) to determine the threshold at which the costs associated with achieving high performance levels outweigh the benefits to the ratepayers.
- Increase the frequency of communication of performance objectives to the overall employee base and ensure that the use of indices is not creating any confusion or minimizing the significance of individual measures.
- Make the ATIP dashboards easier to locate on the intranet site.

IX. CUSTOMER OPERATIONS

This chapter provides the results of NorthStar's review of the customer operations functions of CECONY and O&R and the controls related to Parts 11 and 13 of the Department of Public Service (DPS) New York Code of Rules and Regulations (16 NYCRR). Part 11 sets forth DPS's rules implementing the Home Energy Fair Practices Act (HEFPA) and the Energy Consumer Protection Act of 2002. Part 11 is generally referred to as HEFPA. Part 13 governs the rights, duties and obligations of every gas, electric and steam corporation or municipality subject to the jurisdiction of the commission as it relates to non-residential customers.

A. BACKGROUND

Customer Operations Organization and Functions

With the exception of a few outsourced functions, CECONY and O&R operate separate and distinct customer operations organizations. Both CECONY and O&R outsourced bill processing in 2014 – CECONY administers the contract and bills O&R for the services. O&R Shared Services processes paper-based payments on behalf of both companies and bills CECONY.¹ Each utility uses a separate customer information system (CIS). CECONY's CIS is referred to as CSS (Customer Service System); O&R's system is referred to as CIMS (Customer Information Management System). **Exhibit IX-1** provides a snapshot comparison of each company's customer service operations.

Exhibit IX-1
Customer Operations Snapshot

Customer Base as of 12/31/14 ²	CECONY		O&R	
	Number of Customers	Percent	Number of Customers	Percent
Electric - Residential	2,868,468	85.2%	262,524	86.3%
Electric – Commercial & Industrial	493,466	14.6%	41,124	13.5%
Electric - Other	6,148	0.2%	611	0.2%
Total	3,368,082	100%	304,259	100%
Gas - Residential	942,977	88.2%	120,764	91.0%
Gas – Commercial & Industrial	122,052	11.4%	11,927	9.0%
Gas - Other	4,051	0.4%		
Total	1,069,080	100%	132,691	100%
Steam	1,688		None	
Service Territory³				
Population Served	9,422,611		750,000	
Total Area Served (square miles)	660		1,350	

¹ DR 21-B

² <http://www.coned.com/documents/Facts-2014.pdf>

³ <http://www.coned.com/documents/Facts-2014.pdf>

	CECONY	O&R
Special Needs Customers⁴		
Accounts Coded Elderly, Blind or Disabled	120,797	20,459
Electric Customers Known to be on Life Support Equipment	5,908	757
Medical Hardship	2,235	0

	CECONY	O&R
Call Center⁵		
Call Volume	About 15.6 million annually; 6.2 million are agent handled	About 900,000 annually; 558,000 are agent handled
Number of Call Centers	Three physical call centers and at-home agents in NY. Dedicated senior line	Two physical call centers and at-home agents in NY. No dedicated senior line
Number of Walk-In Centers	6	4
Call Center Hours of Operation	24/7	M-F 8:00 am – 7:00 pm
Number of Customer Service Representatives (CSRs)	About 600	About 60
Additional CSRs in the event of an emergency	100 from Outsourcer West O&R as resources permit 75 CECONY back office personnel	100 from Outsourcer West 100 CECONY resources 12 O&R back office personnel
Basic Fees⁶		
Pay by check over the phone	Free	Free
Payment with credit or debit card through a third-party vendor, who charges a transaction fee to pay the customer's utility bill	Large Non-Residential 2.6% of payment amount Residential/Small Commercial \$3.35 per transaction	Non-residential convenience fee \$35 charged by vendor Residential convenience fee \$4.25 charged by vendor
Late Payment Charge	1.5%	1.5%
Field Collection Charge	\$29	\$27
Reconnection Charge - Electric	\$26 during bus. hrs./\$28 after	\$27 during bus. hrs./\$41 after
Reconnection Charge – Gas	\$65/\$245 depending on rate class	\$69 during bus. hrs./\$104 after
Low Income Reconnection Charge	One-time waiver \$0	\$0
Electric Street Disconnect	\$114 ⁷	
Electric Reconnect at pole	\$271	\$169 during bus. hrs./\$253 after
Consecutive Estimates – Residential	\$25/month following letter series	\$25/month following letter series
Consecutive Estimates – Non-Residential	\$100 per month following letter series	\$100 per month following letter series
Returned electronic payments	No data	\$6 per item
Returned Third Party Payments	No data	\$9 per item
Returned In-House Payment	No data	\$10 per item

⁴ DRs 921-C and 921-O

⁵ DRs 583, 584, 186-O Attachment 31, IR 28 and 34

⁶ DRs 927-O and 927-C, DR 603-C, DR 286-O Attachments 4 and 5

⁷ A \$114.00 charge when the Company disconnects service in the street for non-payment after the Company tried and failed at least twice, or was refused access by the Customer at least once, to collect amounts due or to terminate service for non-payment at the Customer's premises. The charge for disconnecting service in the street is not applicable to a Customer taking service under SC 1 or to any other Customer who uses such service primarily for his or her residential purposes and has so notified the Company. (DR 927-C, Electricity Leaf 199, General Rules 15.4)

	CECONY	O&R
Returned Business Office Payment	No data	\$10 per item
Dishonored check	\$12	\$10 per item
Collections⁸		
Security Deposits	Limited residential, more non-residential	Limited residential, more non-residential
Inbound Collections Call	Handled by call center	Handled by call center
Outbound Collections Calls	Outsourced	Outsourced
Outside Collections Agencies	One early out, four primary, two secondary and one tertiary agency	Three primary and two secondary agencies
Payment Arrangements	Can be made with the Call Center, through a Field Collector or through the IVR (selected customers, standard offer)	Can be made with the Call Center or through the IVR
Field Collections	Focus on higher \$ value. Meter readers cannot perform collections	\$150 minimum. Focus on over 90-day past due balance. Primarily performed by Customer Field Technicians (CFT) and Electric Meter Technicians 3 rd Class. Meter readers cannot perform collections.
Collections Stops/Visits	About 29,600 per month	About 4,500 per month
Information Systems/ Digital or Self Service⁹		
Customer Information System	CSS legacy system. Built in 1972.	Customer Information Management System (CIMS) – Andersen/Accenture Customer One system customized. May 1998.
Interactive Voice Response (IVR)/Telephony System	Customer Interaction Center system (I3) implemented early 2015. I3 is an all-in-one solution providing automated call distribution, IVR, media recording, dialer, reporting and speech analytics. I3 tracks first call resolution, provides virtual hold and post-call customer surveys (not currently deployed), provides the CSR information on where the customer was in the IVR when the call transferred to a representative. I3 is able to learn customer patterns and tailor IVR options to that customer. Speech analytics to be deployed 2016	Tier Technologies Version 8.0 (2009) I3 scheduled end of 2015
IVR Self Service Options	Report an electric outage Report electric and gas meter readings Establish a payment agreement Process a reconnect for a customer terminated for non-payment Can pay with credit or debit card via the phone through a third-party vendor or using a bank account on the IVR Basic self-service transactions	Can pay with credit or debit card via the phone through a third-party vendor or using a bank account on the IVR Can establish a payment agreement Basic self-service transactions
Website	www.coned.com Both websites have a different look and feel	www.oru.com Both websites have a different look and feel

⁸ IR 16, 29 and 31, DR 249-C

⁹ DR 18-O, DR 362-C (Confidential)

	CECONY	O&R
Website Self-Service Capabilities ¹⁰	Start and stop (unless service inactive) Submit meter read Move/Transfer service One time, autopay and budget billing for checking and savings Credit/debit through third-party Online form for life support/life sustaining equipment (LSE) and medical hardship but not for EBD (elderly, blind and disabled) No autopay amount or timing flexibility Outage map/online reporting	Start and stop Submit meter read One time, autopay and budget billing for checking and savings Credit/debit through third-party No autopay amount or timing flexibility Outage map/online reporting Can view interval data on MyAccount
Mobile ¹¹	Report outage Submit meter read Basic self-service transactions	Report outage Submit meter read Basic self-service transactions
Text Messages ¹²	Report an outage and receive updates	Report an outage and receive updates
Social Media ¹³	Monitor and respond	Monitor and respond
Chat ¹⁴	No	No

CECONY Customer Operations

Exhibit IX-2 shows CECONY's Customer Operations organization. Descriptions of each organizational unit are provided following the exhibit.

¹⁰ DR 223, Attachment 5, MyAccount Demo (IR 145), DR 523-C

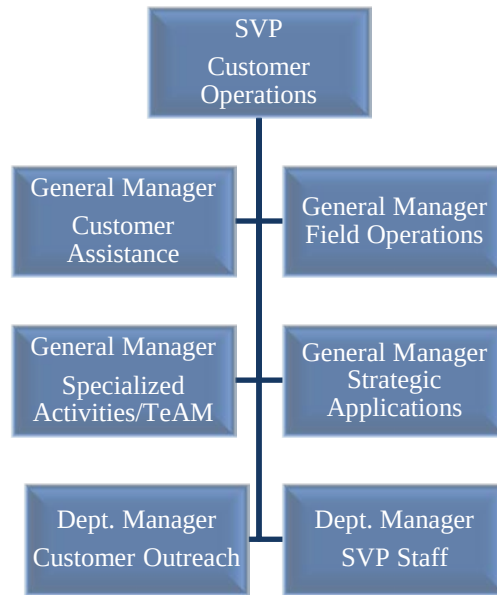
¹¹ DR 223, Attachment 5

¹² DR 223, Attachment 5

¹³ DR 223, Attachment 5

¹⁴ DR 223, Attachment 5

Exhibit IX-2 CECONY Customer Operations Organization – September 2015



Source: DR 1 Supplement 2, Attachment 2.

Customer Assistance

Customer Assistance operates and manages the customer call centers and at-home agents who handle customer calls and respond to customer Internet and mail inquiries. CECONY operates three call centers on a 24/7 basis: Brooklyn (about 300 Customer Service Representatives (CSRs)); Rye (about 70 CSRs); Staten Island (about 70 CSRs).¹⁵ The Rye call center also manages the six walk-in centers. Staten Island manages the 25 at-home agents. All call centers handle all skills (e.g., turn-on/turn-off, billing, collections).¹⁶ Customer Assistance also manages credit activities for misapplied payments, life support/life sustaining equipment (LSE) accounts, medical hardship accounts, elderly, blind and disabled (EBD) and other “concern” accounts, high dollar, and sensitive accounts. The Personal Service Group within Customer Assistance handles high/low bills, misapplied payments, identity theft, long-term adjustments, rate assignment, and potential shared meter or other similar issues that require either an internal or a field investigation. These examples cannot be resolved by the call center.¹⁷

Field Operations North & South

Field Operations handles cycle meter reading, turn-on and turn-off requests, non-routine reading inquiries, and collection field activities. CECONY bills its customers monthly in

¹⁵ IR 28

¹⁶ IR 28

¹⁷ Calls are referred within CSS. DR 207-C, November 12, 2015 discussion with the CECONY Audit Project Manager, DR 530-C Attachment 1.

accordance with a meter reading schedule.¹⁸ Readings taken on the scheduled reading date are known as cycle reads. Special reads can be taken at other times for the following reasons:¹⁹

- When a customer's service is turned off
- When a meter is exchanged or removed
- To verify a questionable reading taken on a cycle date.

The Field Operations Revenue Protection Group identifies and corrects theft and irregular metering conditions. The associated billing is handled by the Unmetered Services Group within Specialized Activities/TeAM discussed below.

Specialized Activities/TeAM

Specialized Activities provides a number of different services, including: billing for theft of service, unmetered service, and other irregular meter conditions identified by Field Operations; inputting meter information (new meters, meter exchanges and removals); and serving as interface with the telecommunications companies using CECONY's facilities.

The Corporate Customer Group (CCG) within Specialized Activities/TeAM handles all customer service, billing and credit-related activities for multi-borough corporations and governmental agencies using gas, electric and/or steam services. CCG handles approximately 82,000 customer accounts, which represent 30 percent of the total company income: 67,234 commercial accounts, 11,428 NYPA accounts and 3,104 residential accounts.²⁰ An account can be designated as a CCG account in any of the following ways:

- Executive Assignment – Certain accounts requiring special collection actions or handling can be assigned to CCG by a CECONY executive.
- Customer Request – Any customer with total annual electric and gas revenues (to CECONY) in excess of \$500,000 may request CCG to service their multi-borough account.
- Demand Usage Threshold – Any account with a registered demand of at least 180 kW in the last 12 months will be designated a CCG customer. New services with expected load of 180 kW will also be designated a CCG customer.
- Gas Meter Constant – Any new or existing account with a gas meter multiplier of 10. (A designation of the relative consumption).

The Retail Choice Group within Specialized Activities/TeAM acts as a liaison between the Energy Service Companies (ESCOs) and the customer in addressing account inquiries. It also provides program and operational support to the ESCOs.

¹⁸ There some residential meters in the Bronx that are read bi-monthly. These customers can request a monthly bill even though the meter is read bi-monthly. In this situation, the customer would get an estimated bill in the interim months.

¹⁹ DR 201-C, Attachment 9

²⁰ CECONY provides power to NYPA as a customer. NYPA in turn has 11,428 accounts.

The Executive Action Group (EAG) manages sensitive communication from customers, including executive complaints and correspondence, consumer appeals, religious rate assignment, shared meter cases and Public Service Commission (PSC) complaints.

Strategic Applications

The Strategic Applications Group serves as the interface between CECONY's CSS users and CECONY's Information Resources Group; handles processes and procedures and reporting for the Department (e.g., PSC reporting and the Chief Executive Officer (CEO) Certification Process); manages the out-sourced bill print vendor; serves as the interface with Regulatory on rate case filings; sets all financial targets for customer operations and tracks and reports on their achievement; and, controls all activities related to the final account process and enrollments in the Department of Social Services (DSS) payment guarantee programs. Strategic Applications also provides subject matter expertise in the areas of credit and collection, "back office" and metering policy, and manages the Automated Meter Reading (AMR) installation process. The Process Excellence Group within Strategic Applications handles the online community (a targeted on-line customer survey mechanism); outage communications; and customer self-service.

Customer Outreach

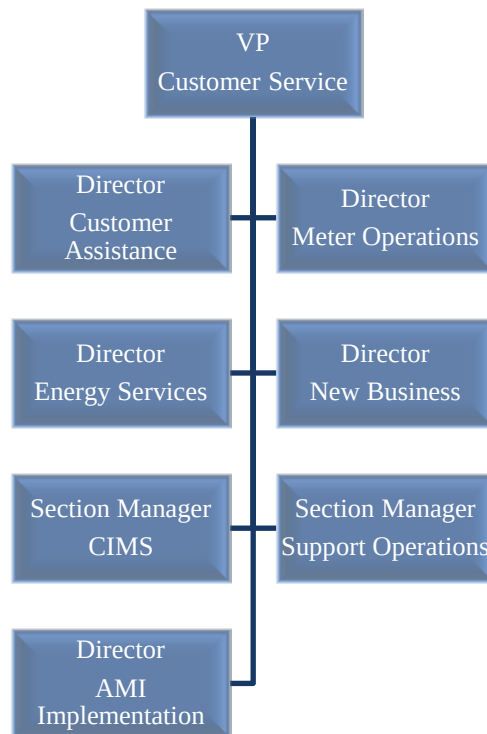
Customer Outreach develops customer awareness and educational programs and communication vehicles including bill inserts, customer news, the SPOTLIGHT newsletter for seniors and disabled customers; educational programs for school children; energy efficiency tips and safety awareness materials. It also coordinates activities for outreach on programs to assist non-English speaking and low-income customers. It serves as liaison with social service agencies, government agencies, other utilities and PSC staff, and coordinates customer satisfaction surveys and market research for Customer Operations.²¹

O&R Customer Service

Exhibit IX-3 shows O&R's Customer Service organization. Descriptions of each organizational unit are provided following the exhibit.

²¹ IR 32

Exhibit IX-3
O&R's Customer Operations Organization – September 2015



Source: DR 1 Supplement 2, Attachment 2.

Customer Assistance

Customer Assistance manages O&R's two call centers, the at home agents and the payment kiosks. Customer Assistance also responds to written inquiries. The Customer Accounting Group within Customer Assistance handles the back office functions including rate verifications, monthly bill/rate calculations, high/low bill edits and other billing exceptions, net metering, and large power billing. A Compliance Senior Specialist reviews training documentation and procedures and handles the CEO Certification process.²²

Meter Operations

Meter Operations consists of a number of groups:

- Meter Reading reads approximately 437,500 meters per month throughout the O&R service territory. Meter Reading also performs special reads. Although a portion of O&R's meters are AMR, there is insufficient saturation for drive-by meter reading.
- Field Services performs turn-ons and turn-offs, re-reads and field collections activities. Most collections work is performed by Customer Field Technicians (CFT) and Electric Meter Technicians 3rd Class. Meter Readers cannot perform collections.

²² IR 34 and DR 296-B, Attachment 1 (Confidential)

- The Meter and Test Group conducts all field electric meter testing and mandated regulatory testing; installs, exchanges and removes most electric meters; and, conducts shared meter investigations.
- The Electric Meter Shop receives and distributes meters; performs new meter acceptance testing; retires and processes returns of meters removed from the field; conducts regulatory-required retired meter tests; and repairs or disposes of used meters. Gas meters are refurbished by an outside entity.
- The Revenue Protection Group handles unmetered and potential theft of service cases.
- A Meter Translation & Computer Systems Application Group, a Meter Engineering and Technical Services Group, and a Compliance function.²³

Energy Services

Energy Services manages O&R's retail access program and the four energy efficiency programs. About 92,000 electric and 60,000 gas customers participate in O&R's retail access program, representing about 40 percent and 60 percent of the utility's load, respectively. Energy Services performs education and outreach for both the retail access and energy efficiency programs and serves as the primary point of contact for the ESCOs. An individual within Energy Services also works on the CEO Certification.²⁴

New Business

New Business handles all residential, commercial and industrial, new customer electric and gas construction projects. It serves as liaison with large customers, contractors, developers, and other new customers and leads the oil-to-gas conversion work. New Business processes, reviews and approves applications, conducts site visits, determines the amount of customer contribution required, and reviews cut-in cards for electrical work and plumber's certifications for gas work. It also manages municipal street lights and serves as the direct point of contact for gas interruptible customers.²⁵

Customer Information Management System (CIMS)

The CIMS group provides support for the various systems used by Customer Service including O&R's customer information system CIMS, the New Construction Project Management System (NUCON), Project Center, the Field Order Route Design (FORD), FORD Wireless, My Account, the Ditch Repair System (DRO) and the Road Opening Permit Electronic System (ROPES).²⁶

²³ DR 296-B, Attachment 1 (Confidential), IR 36

²⁴ DR 296-B, Attachment 1 (Confidential), IR 35

²⁵ DR 296-B, Attachment 1 (Confidential), IR 37

²⁶ DR 296-B, Attachment 1 (Confidential)

Support Operations

Support Operations consists of Credit and Collections, Quality Assurance/Compliance, Executive Communications, and Cost Management. Credit and Collections establishes credit and collections policies, oversees accounts receivable, oversees the vendor performing outbound collections calls, manages the outside collection agencies and administers the life support and medical hardship programs. As discussed previously, the Meter Operations Group performs field collections. Quality Assurance (QA) reviews the policies and procedures for all of Customer Service and conducts audits and QA reviews. Cost Management is responsible for all Customer Service budgeting and variance reporting. Executive Communications handles all escalated and PSC complaints.²⁷

AMI Implementation

AMI Implementation is a newly-formed group responsible for managing O&R's Advanced Metering Infrastructure (AMI) implementation project.

Customer Service Regulations

New York utilities are governed by 16 NYCRR. Part 11, also known as HEFPA, was enacted in 1981 to provide electric and gas residential customers protection in the areas of services, billing and payment procedures. Subsequent amendments to 16 NYCRR extended HEFPA protection to consumers served by large private water companies (1986), incorporated the shared meter law (1995), and extended HEFPA protections to the transactions between residential customers and ESCOs (2002).²⁸ 16 NYCRR Part 12 addresses consumer complaint procedures. Part 13 establishes rules governing the provision of service to non-residential customers.

In general, both Parts 11 (residential) and 13 (non-residential) address:

- The provision of service, including requirements for written applications, security deposits, denials of service, and timelines for initiation of service.
- Late payment and other charges, and deferred payment arrangements.
- Meter reading and billing, including estimated bills, back billing and levelized (or budget) billing.
- Bill content and notification requirements.
- Termination, disconnection and suspension of service.
- Reconnection of service.
- Complaint handling. (16 NYCRR Part 12 also addresses customer complaints.)

Part 11 also includes procedures for situations involving service threatened with disconnection due to lack of payment in cold weather; for customers with medical emergencies; elderly, blind and disabled customers; financially troubled customers; and heating customers. These protections do not apply to non-residential customers. Special collections-related protections are offered to EBD customers, customers on life support/life

²⁷ DR 296-B, Attachment 1 (Confidential), IR 38

²⁸ <http://utilityproject.org/wp-content/uploads/2013/12/HEFPA-Chapter-Final-1231131.pdf>

sustaining equipment (LSE) and medical hardship customers. The regulations provide definitions for each category, and in some instances documentation (e.g., of a medical condition or the inability to pay) is required.

- Medical emergencies – if a customer demonstrates a medical emergency and obtains a certification from a medical doctor or local board of health the utility may not terminate service for 30 days. A certificate may be renewed if the customer demonstrates an inability to pay his/her bill before the expiration of the initial certificate. Renewed certificates may stay in effect for 60 days or longer. After the expiration of a certificate or if the utility determines the customer has the ability to pay, it must send a termination notice 15 days prior to termination.
- LSE – if a customer or resident of the household suffers from a medical condition requiring utility service to operate a life sustaining device (e.g., iron lung or dialysis machine), upon certification and the demonstration of inability to pay, utilities may not terminate service and must place special identification on the meter. The LSE certification remains in effect until terminated by the PSC.
- EBD – if a customer is considered EBD and all other residents of the household are either EBD or under 18 years of age, the utility must make a diligent effort to call an adult resident of the household at least 72 hours prior to termination, disconnection, or suspension of service and attempt to make payment arrangements or other arrangements (e.g., payment by a governmental, welfare or private organization) to prevent termination. If the utility is unable to make arrangements with the customer it must notify the local department of social services and wait at least 15 days for possible payment before termination.
- Cold Weather Provisions (November 1 to April 15) – During the cold weather season, utilities are required to take additional precautions for customers whose service is heat-related. The utilities must contact the customer or an adult resident at the premise by telephone or in-person at least 72 hours before the intended termination. Phone calls must be made once during normal business hours, and if unsuccessful, once during reasonable non-business hours. If the calls are unsuccessful, the utility must conduct an on-site personal visit. At the time of termination, the utility must again attempt to contact the customer in-person prior to termination. The purpose of the contact is to determine if the resident is likely to suffer a serious impairment to health or safety if the service is terminated. If the utility does disconnect service and the customer has not contacted the utility by 12 noon on the following day, the utility must immediately conduct a site investigation. If it determines a serious condition exists, it must restore service.
- The utilities have agreed with the PSC not to lock service for EBD customers during the cold weather period (discussed in more detail in Conclusions IX-18 and IX-19).²⁹

²⁹ DR 928-O, Attachment 2 Customer Service Joint Procedure - EBD

Commission Complaints

Any utility customer may file a complaint with, or ask a question of the Commission regarding his or her utility service when the customer believes he or she has not obtained a satisfactory resolution of a dispute with a regulated utility. Complaints may involve bills for utility service, deposit requests, negotiations for deferred payment agreements, service problems, and other matters relating to utility service. Complaints to the Commission may be filed electronically, in person, by phone or via the mail. The Commission requests that the customer first attempt to resolve the issue with the utility before contacting the Commission.³⁰

Utilities are required to accept and process complaints in a simple manner and form, promptly investigate the complaint in a fair manner and report the results to the complainant.³¹ The utility may not terminate, suspend or disconnect a customer's service, based on amounts billed that have not been paid and which have been held in dispute by DPS Staff, from the time that a complaint or an appeal of a complaint is filed with the utility or the commission until 15 days after the decision is communicated to the customer or his or her representative. Customers must continue to pay undisputed portions of the bill.

16 NYCRR Part 12 sets forth procedures for complaints to the Commission.³² Once a customer files a complaint with the Commission and provides information on the complaint, the utility is notified and required to file information regarding the merits of the complaint. Once the necessary information has been obtained from the utility, a staff member from the DPS's Office of Consumer Services (OCS) will make an initial decision on a complaint and will contact the customer to inform him or her of the decision. The utility will also be notified as to the disposition of the complaint and any action it must take.³³ If the customer or utility objects to the initial decision, they may request an informal hearing or review. The informal review is conducted by a staff member who has not previously worked on the complaint. If either party disputes the results of the informal hearing or review, they may file an appeal which will be decided by the Commission.³⁴

On an annual basis, OCS handles about 250,000 customer contacts statewide, of which approximately 30,000 are forwarded to service providers for investigation and response.³⁵ In a continuing effort to reduce consumer difficulties and provide timely resolution to those consumers who experience a problem, OCS developed the Quick Resolution System (QRS) in 2002.

³⁰ <http://www3.dps.ny.gov/W/PSCWeb.nsf/All/755C4F39A58C924C85257B2F0067FCA5?OpenDocument> and

16 NYCRR Part 11.20

³¹ 16 NYCRR Part 11.20

³² 16 NYCRR Part 12.

³³ 16 NYCRR Part 12.4

³⁴ 16 NYCRR Part 12

³⁵ New York State Department of Public Service, Office of Consumer Services, Quick Resolution System: A Service Providers Guide to handling customer difficulties reported to New York State Department of Public Service Ver. 2.5 (issued April 2015) (April 2015 QRS Guide) available at: <http://www3.dps.ny.gov/W/PSCWeb.nsf/All/FA05AA0D1F13FED085257687006F3A81?OpenDocument>

In practice, when a complaint is received by the PSC, it is first referred back to the utility for resolution, and is referred to as a QRS. For a QRS complaint the utility is required to contact any customer with a collection or service-related issue within two working hours. All other customers are to be contacted by the close of the business day following receipt of the case.³⁶ The utility is expected to discuss the QRS complaint with the customer and take the necessary action to satisfactorily resolve the matter with the customer.

At any time during or within 60 days after the handling of a customer's QRS case by the utility, the customer may contact OCS and express dissatisfaction with the manner in which the utility attempted to resolve their issue. Should that happen, the case will be reclassified as a complaint under the Standard Resolution System (SRS), charged as a complaint to the utility and submitted for investigation and a full response to OCS. The utility has 10 calendar days to respond to an SRS complaint.³⁷ These are considered escalated complaints. Utilities are charged penalties if the numbers of SRS complaints are above regulatory requirements.

B. EVALUATIVE CRITERIA

The evaluative criteria were taken from the final work plan and include both the Staff's evaluative criteria, the approved Work Plan and those added by NorthStar.

- Are the company's internal controls related to customer operations (Part 11 and Part 13 of 16 NYCRR) adequate?
- Are requests for the provision, transfer or reconnection of service handled in an appropriate manner and consistent with regulatory requirements?
- Are credit and collections policies and procedures (including deposits, fees, payment arrangements, collections notices and terminations of service) in compliance with 16 NYCRR?
- Are customer bills clear, accurate, timely and do they contain the information required by 16 NYCRR?
- Are meter reading and billing procedures consistent with regulatory requirements?
- Do the companies have controls to ensure they comply with the special protection requirements of HEFPA?
- Do the companies handle customer complaints and inquiries in an appropriate manner, and consistent with regulatory requirements?

³⁶ The Utilities consider these targets rather than hard requirements. Information drops off CECONY's system after 6 months so there is no easy way to demonstrate they meet the targets. For non-emergencies, CECONY customer's received an automated call within 24 hours. (IR 231-C). The two-hour standard is similarly not tracked at O&R, but given the relatively small volume of complaints they try to contact all customers within 2 hours. Both Utilities rely on the PSC's CSRI index to assess performance (IR 231-O)

³⁷ April 2015 QRS Guide

- Do the companies have effective procedures for measuring the quality of service they provide to customers?
- Do the companies have processes and systems for soliciting, analyzing and responding to customer feedback?
- Do the companies appropriately measure customer service levels, and are service levels adequate and consistent with regulatory requirements?

C. FINDINGS AND CONCLUSIONS

1. O&R's policies and procedures for handling requests for the provision or transfer of service are consistent with regulatory requirements, but there may be gaps in the controls to ensure customers are provided with timely service upon provision of required documentation.

- Parts 11.3 and 13.2 of 16 NYCRR outline the requirements for residential and non-residential customer service applications, respectively.
 - In general terms, the utility has the ability to deny residential service to customers who are delinquent on a prior account, for seasonal or short-term service applicants who fail to post a timely deposit, or for applicants that fail to provide proof of identity. It may deny service to non-residential customers for failure to provide proof of identity or responsibility for the premise, failure to pay amounts previously billed for which the applicant is legally responsible or a required security deposit.
 - Service must be provided to residential applicants within 5 days and non-residential applicants within 10 days.³⁸
 - If an applicant is initially denied service and the reason(s) for the denial is cured, the utility must provide service within 2 days for residential applicants and 3 days for non-residential applicants.
 - Utilities that fail to initiate service within the required time frame must pay a residential applicant \$25 per day for each day service is not supplied.³⁹
 - Utilities may require written applications if there are arrears or other collections activity at the premises to be served, where there is evidence of meter tampering or theft, if the meter has advanced and there is no customer of record, or if the application is made by a third party.⁴⁰
- Parts 11.3(a)4 and 13.2(c)3 outline the documentation retention requirements in the event service is denied. Utilities are required to maintain, for a period of not less than one year, commercial service applications that are denied and the written notice of denial, and for residential applicants that are denied, the name and address of the applicant, the date of the application and the name of the utility representative that denied it.

³⁸ Section 11.3 and 13.2 of 16 NYCRR

³⁹ Section 11.3 and 13.2 of 16 NYCRR

⁴⁰ Section 11.3 (a) (4) (v)

- O&R's procedures and training are detailed and consistent with the requirements of Parts 11.3 and 13.2 of 16 NYCRR as it relates to the provision and transfer of service.⁴¹ O&R's applications for service and denial notices are consistent with the language requirements of Parts 11.3 and 13.2 of 16 NYCRR.⁴²
- O&R handles most requests for service orally, through the call center.⁴³ For the year ending September 30, 2015, O&R processed 53,050 connect orders – 90 percent were oral applications, the remaining 10 percent were written applications.⁴⁴
- Initial requests for service are processed within required time frames.
 - O&R has not paid any penalties for failing to initiate service within the required time frames within the last three years (the time period requested by NorthStar).⁴⁵ O&R and CECONY do not generally physically turn off service when a tenant vacates a premise. As a result, the service is generally on when a new tenant requests service.⁴⁶
 - **Exhibit IX-4** provides the distribution of O&R's service initiation dates in November 2015. As reported by O&R, of the 4,049 total connect orders, only four residential orders exceed the five business days' time requirement. O&R provided explanatory notes to NorthStar when the period exceeded the time requirement. Per O&R's explanations, all customers were actually provided service within required time limits.

⁴¹ DR 202-O

⁴² DR 760-O and 767-O.

⁴³ DR 770-O and January 4, 2016 clarification email from O&R regarding DR 770.

⁴⁴ DR 770-O

⁴⁵ DR 768-O. The date of this response was 12/15/15

⁴⁶ December 30, 2015 call with O&R regarding DRs 768-O and 771-O (IR 247). If an account is found to have consumption with no customer of record, then the services is physically turned off.

Exhibit IX-4
O&R Service Initiation Timeframes – November 2015

Number of Business Days It Took to Start Service	Number of Residential Customers	Number of Non-Residential Customers	O&R's Explanation
0	3,497	361	None Required
1	103	8	
2	31	2	
3	38		
4	2		
5	3		
5 Days - Residential Requirement to Initiate Service			
6 business days to initiate service	1		Service was provided the same day; however, the administrative paperwork was not completed on the service initiation date.
7 business days to initiate service	1		The seven-day period was the result of the time needed by the customer to correct violations.
10 Days – Non-Residential Requirement to Initiate Service			
14 business days to initiate service	2		The 2 instances were electric and gas for the same customer account. The customer initially requested an earlier service date, but then revised it. The connect order was completed on the day requested by the customer. The difference between the requested earlier service date (the date of record) and the connect order was 14 days.
Total	3,678	371	

Source: DR 772-O.

- O&R performs an annual compliance review to ensure compliance with the applicable time frames and other regulatory requirements associated with denials of service. O&R's December 2015 review found no issues of non-compliance.⁴⁷
- During the twelve-month period ending September 30, 2015, O&R initially denied service to 2,002 residential applicants and 50 non-residential applicants, primarily due to the need for identification and proof of address.⁴⁸ NorthStar reviewed a sample of O&R's denials of service and found the following:
 - NorthStar reviewed a sample of five non-residential denials and identified one instance of a violation of regulatory requirements (20 percent of the sample):⁴⁹
 - All were denied service on the same day of application.
 - For the 4 that were denied in 2015, the denial of service was on file and provided the reasons for the denial.
 - In two of the cases the customer did not ultimately take over service; for two the service was already on – all consistent with regulatory requirements.

⁴⁷ DR 765-O

⁴⁸ DR 769-O and DR 771-O

⁴⁹ DR 872-O (Confidential), 872-O Supp, Attachment 1 (Confidential), 2/3/16 email from O&R

- For the remaining one (20 percent of the sample), due to human error the hold was not released on the account until almost a month after the documentation was received. The requirement is three business days. (See Recommendation IX-1)
 - NorthStar reviewed a sample of 23 residential denials of service and found them to be consistent with regulatory requirements:
 - All were denied service on the same day as the application
 - O&R had retained the denial of service letter for the 15 selected in the sample that had occurred within the last 12 months.
 - Initial denials were for reasons consistent with HEFPA – possible theft of service, past due balance, identity check failure.
 - For most of the customers that cured the initial reason for denial the service was already on; those that were locked were restored within 1 to 2 business days. (The requirement is within 2 business days).⁵⁰
- 2. CECONY is not in compliance with the denial of service notification or retention requirements of 16 NYCRR. NorthStar was not able to perform the same detailed testing of CECONY’s compliance as it did for O&R due to CECONY’s system constraints because the information was not available. As a result, NorthStar cannot confirm CECONY’s compliance with timing requirements associated with the provision of service; however, it is clear CECONY has paid penalties for service delays.**
- CECONY’s training and procedures are consistent with the requirements of Section 11.3 and 13.2 of 16 NYCRR; however, in practice they are not followed. CECONY does not maintain the required documentation and not all customers are sent a written denial of service notification as required by HEFPA.
 - CECONY does not have procedures that address routine turn-ons or transfers of service. CSR training is detailed and consistent with Part 11.3 and Part 13.2 of 16 NYCRR; however, it is not always followed.⁵¹
 - CECONY’s applications for service and denial notices are consistent with the requirements of 16 NYCRR, but most customers are not sent written denial notices.⁵²
 - According to CECONY, as a matter of routine, customers are not generally denied service, and service is typically already on at the premise.⁵³ Additionally, most applicants call prior to the date of service requested. CECONY does not consider it a “denial of service” if the service is “hot,” (i.e., the service is already on at the premise) but the applicant is asked to provide more information as a condition of

⁵⁰ DR 871-O (Confidential), 871-O Supp, Attachment 1 (Confidential)

⁵¹ DR 202-C, DR 237-C (Confidential), DR 201-C Attachment 12, 2/16/16 email from CECONY

⁵² DR 760-C and link in DR 201-C, Attachment 12, DR 767-C

⁵³ IR 236, DR 765-C

becoming a customer of record.⁵⁴ If the applicant does not provide the required information the service would eventually be turned off. These customers are not sent a denial of service notice. This is not generally consistent with the requirements of 16 NYCRR.

- During the period September 30, 2014 through September 30, 2015, CECONY processed 423,454 service applications – 96 percent were oral or internet and 4 percent were written.⁵⁵
- From January 2013 through November 2015, CECONY paid a total of \$2,225 in penalties associated with 60 delays in the provision of service.⁵⁶ At NorthStar's request, CECONY pulled a listing of all requests for service in the month of November where the service was cold. All were provided service within the required time frames.⁵⁷
- NorthStar was not able to perform the same detailed testing of CECONY's compliance as it did for O&R due to CECONY's system constraints because the information was not available. As a result, NorthStar cannot confirm CECONY's compliance with timing requirements associated with the provision of service. At a minimum, CECONY is not in compliance with Part 11.3(a)4, 11.3(b)2 and 13.2(c)3 of 16 NYCRR.
 - CECONY does not maintain separate hard copy files of all commercial service applications that are denied and the written notice of denial, and for residential service records of the oral or written requests that are denied, the name and address of the applicant, the date of the application and the name of the utility representative that denied it. The information is coded in the CIS but retrieving this information requires a manual, time consuming effort.⁵⁸
 - At NorthStar's request, CECONY performed a query for November 2015 of the walk-in and call centers requests for service. Results are provided in **Exhibit IX-5**. The low number of denials is due to CECONY's interpretation of the regulatory requirement. CECONY does not consider it a denial of service if a customer calls to activate service, the service is already on but the customer is asked to provide more information.⁵⁹

Exhibit IX-5 CECONY Denial of Service Data – November 2015

	Residential	Non-Residential
Number of Applications	19,603	6,544
Coded in CIS as Deny (or more information required)		
Service already on (Hot)	33	9

⁵⁴ DR 772-C, 2/16/16 email from CECONY

⁵⁵ DR 770-C

⁵⁶ DR 768-C

⁵⁷ DR 772-C, Attachment 1

⁵⁸ DR 771-C

⁵⁹ CECONY verification response

Service off (Cold)	10	8
Total	43	17

Source: DR 771-C

- According to CECONY, the 33 residential applicants where the service was hot were advised of the documentation requirements over the phone and were not sent the required denial of service notice. Part 11.3(b)2 requires written denial of service notices.
- According to CECONY, if the service is “cold,” (i.e., the service is not on at the premise) the customer will be sent the written denial notice. For the 8 non-residential customers CECONY was only able to locate 5 of the 8 documents.⁶⁰

3. Both utilities handle requests for the reconnection of service in an appropriate manner and consistent with regulatory requirements.

- The utilities are required to reconnect residential and non-residential customers who have been disconnected for reasons of non-payment within 24 hours (unless circumstances beyond its control exist) upon:
 - Receipt of the amount of arrears for which the customer was disconnected (and required security deposit in the case of non-residential customers)
 - Payment of a down payment and establishment of a payment agreement
 - Guarantee of a payment by a social services agency
 - Where a serious impairment to health or safety is likely to result, or
 - As directed by the PSC.⁶¹
- CECONY’s and O&R’s reconnection policies are consistent with regulatory requirements. The utilities actually endeavor to reconnect customers on the same day, fielding reconnect orders up to 4:00 or 5:00 pm.
 - CECONY’s policy requires that CSRs issue the reconnect order for the same day the issue is cured (unless the order is future dated), but advise the customer that all reconnects will be done within the required 24 hours.⁶²
 - O&R’s policy is to enter reconnects in CIMS as date sensitive to ensure compliance with regulatory requirements. Four times per day CIMS automatically generates a report comparing payments with any meters that remain locked in order to facilitate reconnection within required time frames.⁶³
- The Companies are required to attempt same-day reconnects for residential electric customers who become eligible for reconnection by 5:00 pm.⁶⁴ Most CECONY and

⁶⁰ DR 771-C

⁶¹ 16 NYCRR Part 11.3 and 16 NYCRR Part 13.4

⁶² “E-Information Reconnects” (DR 586-C, Attachment 9) and “T/ON’s – Reconnects at Meter” (DR 586-C, Attachment 10), CSP 2-3-50 (DR 202-C)

⁶³ CIMS Demo (IR 65), DR 303-O

⁶⁴ Case 13-E-0030 et al, CECONY Rate Case, Order Approving Electric, Gas and Steam Rate Plans in Accordance with Joint Proposal (Issued February 21, 2014), pp. 95-96 and Case 14-E-0493 et, al, O&R Rate

O&R customers are reconnected on the day the issue is cured, as shown in **Exhibit IX-6**.

Exhibit XI-6
Percentage of Same Day Reconnects

Year	CECONY		O&R	
	Number of Reconnect Orders	Percent Attempted Same Day	Number of Reconnect Orders	Percent Completed Same Day [Note 1]
2014	43,774	99.94%	6,803	85.6%
2015	41,185	99.98%	6,324	84.4%

Note 1: O&R data show actual completed reconnects. More may have been attempted.

Source: DR 19-C Attachment 27, DR 550-C, PSC website, DR 19-C Attachment 27, DR 874-O, 2/3/16 email verifying data was NY only).

4. CECONY’s CSR training does not accurately reflect the residential security deposit requirements of 16 NYCRR. O&R’s residential and non-residential procedures require revision to ensure compliance. Actual practices by both utilities are consistent with regulatory requirements.

- The utilities’ customer information systems serve as the primary control over security deposits.
 - CECONY’s CSS determines the need for and calculates the amount of the security deposit, unless there is no history for the account, in which case the deposit amount is calculated manually.⁶⁵
 - O&R’s CIMS determines the amount of deposit required, calculates the interest and automatically releases deposits.⁶⁶ O&R’s Customer Accounting Department can override the CIMS amount in the event of a change in the change of the status of a non-residential facility (e.g., from manufacturing to a restaurant).⁶⁷ CSRs are not able to override a CIMS-calculated security deposit.
- O&R has additional controls to validate the security deposit process:⁶⁸
 - On an annual basis, the QA function within Support Operations validates the residential deposit calculations, interest calculations and the issuance of deposit review letters.
 - The Senior Specialist within the New Construction Group reviews five new construction projects per week as part of its Quality Assurance review; the security deposit calculation is checked as part of that review.⁶⁹

Case, Order Adopting Terms of Joint Proposal and Establishing Electric and Gas Rate Plans (Issued October 16, 2015), pp. 54-55.

⁶⁵ IR 175

⁶⁶ IR 176, DR 202-O Attachment 59

⁶⁷ IR 176

⁶⁸ IR 176, DR 237-O (Confidential)

⁶⁹ DR 844-O (Confidential)

- CIMS will automatically adjust the security deposit amount if the requirements change by more than 25 percent in either direction (i.e., if the customer’s consumption has changed significantly such that the required security deposit amount changes by more than 25 percent but less than 50 percent). In which case the customer will either be issued a refund or billed the required amount. If the adjustment is over 50 percent, CIMS generates an exception which will be manually reviewed.
- HEFPA allows the utilities to require residential customer security deposits from temporary or seasonal customers, delinquent customers, customers who have had utility service terminated during the preceding 6 months, customers who fail to provide reasonable proof of identity, or as authorized by the Commission.
 - Deposit amounts may not be greater than twice the average monthly bill for a calendar year, in the case of a non-heating customer and twice the estimated amount of the average monthly heating season bill, for heating customers.⁷⁰
 - Interest accrues to the customer based on PSC-established rates and deposits (and interest) must be returned upon timely payment of bills for a 12-month period.⁷¹
 - If a deposit is required from a delinquent residential customer the utility must permit the customer to pay the deposit in installments over a period not to exceed 12 months. Written notice must be provided at least 20 days before the deposit is required.⁷²
- The utilities collect residential deposits on limited occasions, as shown in **Exhibit IX-7**. As a general rule, O&R does not charge residential customers security deposits.⁷³ Residential accounts are automatically considered “deposit waived”.⁷⁴ New CECONY residential customers are also not generally charged a security deposit.⁷⁵

Exhibit IX-7
Residential Customer Security Deposit Practices

	CECONY	O&R
Regulatory Allowances/ Requirements		
Temporary or seasonal customers	Not charged security deposit	Could be charged a security deposit
Delinquent customers (two consecutive month’s arrears or service terminated for non-payment in preceding 6 months)	Not charged security deposit	Not charged security deposit – only bankruptcy customers might be charged a security department
Customers terminated due to non-payment	Charged at reconnections	Not charged security deposit
Fail positive identification	Deposit charged	Not charged security deposit

⁷⁰ 16 NYCRR Part 11.12

⁷¹ 16 NYCRR Part 11.12

⁷² 16 NYCRR Part 11.12

⁷³ IR 176, Joint Procedure -0011 “Customer Deposits for Gas and Electric Service” (DR 202-O, Attachment 59)

⁷⁴ Connects Training, p. 7

⁷⁵ Customer Service Procedure 3-0-1 (DR 202-C)

	CECONY	O&R
Date refunded	13 th month if no past due bills for the prior 12 months	13 th month if no past due bills for the prior 12 months
Residential Deposits		
Total Residential Customers	2,923,262	197,982
Number with Deposits	150,233 As of October 2015	492 As of roughly 11/5/15
Percentage	5.20%	0.25%

Source: IR 175 and 176, DR 659-C and 659-O.

- Although not overly detailed, CECONY's procedures are consistent with HEFPA's residential security deposit requirements.⁷⁶ CECONY's tariff is also consistent with the security deposit requirements of 16 NYCRR.⁷⁷ However, CECONY's CSR training is inconsistent with the 12-month installment plan allowed under HEFPA. The CSR training states that residential customers that fail to provide proof of identity should be advised that a deposit must be paid up front, or at a minimum 50 percent up front and the balance over two months. If they do not make a payment and the service is on, it will be terminated; if it is off, it will not be turned on.⁷⁸ HEFPA allows for a 12-month installment.
- Although they are not followed in practice, O&R's "Joint Procedure on Customer Deposits for Gas and Electric Service" is not consistent with HEFPA. O&R's actual practice is consistent with HEFPA. The procedures states that:
 - The utility may charge a deposit for a new residential customer that is considered a credit risk. (This is not allowed by HEFPA).
 - A residential customer that cannot pay a deposit in full will have service terminated or not turned on. (HEFPA allows for a 12-month installment.)
- Per Part 13.2 of 16 NYCRR, utilities may charge security deposits of new non-residential customers and existing non-residential customers who are: a) delinquent; b) whose financial condition is such that they may default in the future; c) who have filed for reorganization or bankruptcy; or, d) that have been back-billed for tampering. Non-residential customers may pay the deposit in three installments: 50 percent down and 2 monthly payments.⁷⁹
- Exhibit IX-8** provides the current number of non-residential security deposits held by each utility.

Exhibit IX-8 **Non-Residential Customer Security Deposit Practices**

Non-Residential Customers	CECONY	O&R
Total Non-Residential Customers	565,480	33,679
Number with Deposits	235,262	5,452

⁷⁶ Customer Service Procedure 3-0-1 (DR 202-C). Procedures do not address repayment.

⁷⁷ CECONY Tariff

⁷⁸ DR 201-C, Attachment 12

⁷⁹ 16 NYCRR, Part 13.2

Non-Residential Customers	CECONY	O&R
Percentage with Security Deposits	41.60% [Note 1]	16.19%

Note 1: According to CECONY, approximately 81 percent of non-residential accounts in arrears have an active deposit.

Source: DR 659-C and 659-O, IR 176

- Although very brief, CECONY's procedures are not inconsistent with the non-residential security deposit requirements of Part 13.7 of 16 NYCRR; however, CECONY procedures do not address all aspects of the Code.⁸⁰
- O&R's procedures require modification to ensure the requirements of Part 13.7 of 16 NYCRR regarding the circumstances under which the non-residential deposit must be paid in full and the potential timing of the deposit refund are clearly reflected in the procedures.⁸¹ The current language leaves room for misinterpretation.
- NorthStar reviewed a sample of the utilities' notices and found them to generally comply with the notification requirements.⁸² We found one exception – O&R's "Your Rights and Responsibilities as a Commercial Customer of Orange & Rockland" does not specifically inform non-residential customers that they may request a review to ensure the deposit is not excessive.⁸³
- For steam accounts, CECONY keeps an index of all deposits on record containing the information required by Part 402.1 of 16 NYCRR.⁸⁴ Deposits are to be held for three years. For existing facilities, deposits are based on past usage. For a new building, CECONY will perform a load projection.⁸⁵ Records of the deposit refund or continued delinquent status allowing CECONY to retain the deposit are contained within the steam billing system.⁸⁶

5. CECONY and O&R's meter reading functions have multiple levels of controls to ensure compliance with Title 16 NYCRR Parts 11 and 13. Fundamental controls include specific processes for reading meters, validating reads, and reconciling faulty reads.

- Meter reading is cycle-based, with the meters read on a monthly basis. Gas and electric meters are read at the same time. O&R uses a 20 bill group cycle.⁸⁷ CECONY operates on a 21 cycle basis, which is more typical of the industry. CECONY and O&R use the following meter reading techniques:

⁸⁰ Customer Service Procedure 3-0-1 (DR 202-C). Procedures do not address repayment.

⁸¹ DR 202-O, Attachment 59

⁸² DR 286-C, Attachments 12 and 13, DR 603-C, IR 179, DR 844-O (Confidential), www.oru.com

⁸³ www.oru.com

⁸⁴ Daily steam deposit record report (DR 762-C)

⁸⁵ IR 175. New steam buildings account for about a handful per year

⁸⁶ 2/9/16 email from CECONY and associated supporting documentation

⁸⁷ IR 36

- Manual reads – meter readers walk a route and manually enter reads into hand-held ITRON devices. Meters are assigned to specific routes in a specific order to facilitate efficiency.⁸⁸
 - AMR – a device on the meter sends a signal to either a vehicle driving by or a meter reader’s handheld device. O&R reads the AMR meters while walking the route. CECONY employs drive-by meter reading in the five boroughs of NYC and Westchester County.⁸⁹ Route saturation is typically the determinant of whether drive-by reading is employed.
 - Digital or analog phone lines are used for interval data recorders (IDR).⁹⁰
- For manual reads, the handheld devices are coded with acceptable high and low limits for reads. Meter readers enter the meter number and then the reads. If the read is outside the limits, the meter reader is required to enter a reread.⁹¹
 - AMR metering reduces meter reading errors, as a signal is sent directly from the meter. AMR accounts for 38 percent of O&R’s meters and about 28 percent of CECONY’s meters.⁹²
 - IDRs are pulled into the billing system monthly.
 - Once the meter read is entered into the billing system, additional verification is performed to ensure the accuracy of the read. Exceptions may be generated and reviewed by each utility’s billing group to ensure the accuracy of the read and associated bill. When necessary, a field order will be issued to re-read the meter.⁹³
 - **Exhibit IX-9** provides the meter reading requirements in Title 16 NYCRR Part 11 and Part 13 that were tested by NorthStar.

Exhibit IX-9 16 NYCRR Parts 11 and 13 Tested Meter Reading and Estimated Bills

Residential Meter Reading	Non-Residential Meter Reading
• When estimated bills for a period of four months or two billing periods (greatest) the utility may: – Make appointment – Let customer phone in read – Provide a mail-in card with the reading • When a read has not been obtained for 6 months or 3 billing periods, must send a notice to arrange access to read meter • When a read has not been obtained in 8 months (4 billing cycles) utility may assess \$25 penalty for not responding	• Meter Reading – Must attempt to obtain an actual read – Required to read between 8 am and 5 pm, and must follow instructions for access – When a read attempt is missed and there are two previous consecutive no-reads, second attempt is required within 7 days – Demand meters requires a third attempt within 7 days of previous read – After six months of remote registration reads, a utility must continually try to gain

⁸⁸ DRs 200-C and 200-O

⁸⁹ IR 29, DR 552-C

⁹⁰ DR 802 and IRs 224 and 228

⁹¹ IR 36, DR 200-C

⁹² IR 36, DR 200-C

⁹³ DR 200-O

Residential Meter Reading	Non-Residential Meter Reading
	access and read the meter – After six months of no reads, a utility must make another attempt or appointment with the customer – For any unsuccessful meter reads, utility should leave a mail-in card for non-demand meters
	• No Access Procedure. No access notices when: – Second consecutive estimated bill for demand meters – Fourth consecutive estimated bill for non-demand meters – Tenth consecutive estimated bill - no access notices and charges will be sent to access controller and customer • No access charge cannot exceed \$100

Source: Title 16 NYCRR

- Parts 11.13 and 13.8 of Title 16 NYCRR require the utilities to make reasonable attempts to obtain an actual reading for every customer's account on a regulatory scheduled basis. Both CECONY and O&R read most meters monthly; the actual read rates for 2014 were 89.9 percent and 96.3 percent, respectively.⁹⁴ A small portion of CECONY's service territory in the Bronx is read bi-monthly.⁹⁵
 - If a CECONY meter reader is unable to read the meter on the scheduled read date, he/she attempts to read it the next day.⁹⁶ CECONY attempts to re-read all demand meters each month if there was missed read on the first attempt.⁹⁷
 - Certain codes entered by an O&R meter reader will trigger a read the next day.⁹⁸
 - If a meter reader is unable to read a meter, both utilities leave a postcard at the customer's premise with instructions on how to read a meter.⁹⁹
 - When a CECONY estimated bill is generated, it includes a note informing the customer that the meter could not be accessed, provides the next meter reading date, and provides the customers with ways in which they can report a read.¹⁰⁰
- The fourth CECONY estimated bill generates a post card which is mailed to the customer requesting access to the meter on the next scheduled date, notifying the customer that they may request a special meter reading appointment, and how to report a customer read.¹⁰¹
- A series of letters are sent if the meter reader continues to be unable to access the meter, and a charge is assessed beginning with the 9th estimated bill (for

⁹⁴ DR 206-C, Attachment 24, DR 206-O, Attachment 2

⁹⁵ DR 200-C

⁹⁶ DR 595-C

⁹⁷ DR 595

⁹⁸ DR 200-O

⁹⁹ DR 202-C, Attachment 32, DR 543-C, DR 543-O

¹⁰⁰ DR 593-C, Attachment 2

¹⁰¹ DR 202-C, Attachment 32, DR 593-C, Attachment 3

residential customers) and the 5th estimated bill (for non-residential customers without a demand meter).¹⁰²

- The timeline for demand meters is more accelerated.
 - Customers receiving “no access meter charges” at O&R are sent letters detailing how many months it has been since the previous meter read and providing the options of scheduling an appointment, calling the read in, or providing a key.¹⁰³
 - Residential customers receive differing letters in the 4th, 6th, 8th, 10th and 11th month. Residential customers may receive no access meter charges after the 8th month per HEFPA but O&R policy is to charge the fine after the 11th month.
 - HEFPA requires no access letters beginning at the 4th month for non-demand meters. O&R takes a pro-active approach and sends a courtesy letter at the 2nd month. Non-demand meter commercial customers also receive letters at the 4th, 5th and 6th months. HEFPA permits a no access meter fine after the prescribed second notice (5th month). O&R policy complies with HEFPA.
 - Commercial demand customers receive 3 letters in months 2-4. HEFPA permits the assessment of a no access meter charge after the second notification (3rd month).¹⁰⁴ O&R policy complies with HEFPA.
 - No access charges are in compliance with Title 16 NYCRR. Residential customers are charged \$25 and non-residential customers are charged \$100.¹⁰⁵
 - Customers of both utilities are able to enter meter reads through the IVR and on the utilities’ websites, if the utility has been unable to access the meter.
- 6. CECONY and O&R are in compliance with Title 16 NYCRR Part 11 and Part 13 in regard to estimated bills.**
- **Exhibit IX-10** provides estimated bill requirements that were tested by NorthStar.

Exhibit IX-10
16 NYCRR Parts 11 and 13 Testing - Estimated Bills

Residential Estimated Bills	Non-Residential Estimated Bills
The utility may render an estimated bill if: • It is calculated in accordance with a procedure approved by the commission and the bill clearly states it is an estimated bill • Reasonable effort has been made to obtain an actual read • The inability to read the meter was outside of the utility’s control	The utility may render an estimated bill if: • It cannot obtain access to the meter • It cannot read even if it has access • A customer read is erroneous or actual read is erroneous • It is unable to make it to the premise • The reading was lost or destroyed • An estimated read is the approved billing method in the tariff • It is calculated in accordance with the stated formula

¹⁰² DR 202-C, Attachment 32

¹⁰³ DR 739

¹⁰⁴ DR 202-O, Attachment 13

¹⁰⁵ DR 739

- | | |
|--|--|
| <ul style="list-style-type: none"> • The reported reading is likely erroneous | |
|--|--|

Source: 16 NYCRR Parts 11 and 13.

- When reads are not obtained or validated in the billing system, CECONY and O&R have established procedures for estimating bills.
 - In 2012, the utilities provided advice letters to the PSC explaining the bill estimating process. Neither utility can provide affirmative PSC approval of the estimation process.
 - O&R's preferred methodology is to use the previous year's consumption.
 - CECONY uses a non-heating and heating estimate based on previous year's consumption and heating/cooling degree days.¹⁰⁶
- NorthStar reviewed samples of the utilities' estimated bills and associated materials and found the following:
 - Bills clearly identify estimated reads.¹⁰⁷
 - The estimated bills were in compliance with the stated calculation methodologies.¹⁰⁸

7. CECONY and O&R's billing functions have adequate controls to ensure the accuracy and timeliness of customer bills.

- Both CECONY and O&R have processes in place to support rate changes that impact bill calculations.
 - CECONY has organized a "Standing Rate Change Committee" chaired by the manager of rates. The charter of this committee is to convene as necessary for the testing and verification of rate changes.
 - O&R has a CIMS implementation team responsible for testing and verification of rate changes.¹⁰⁹
- NorthStar tested a sample of bills and found the bills were correctly calculated.
- Only a few CECONY and O&R customers (less than 12) receive manually-calculated bills. Manual billing creates the potential for billing errors. These bills are complex and would require significant effort to program into the billing systems for very few customers. The bills are calculated using Microsoft Excel spreadsheets. NorthStar reviewed a sample of these bills and found them to be accurate.¹¹⁰
- CECONY and O&R have well defined systems for handling billing exceptions. Reads that are outside of established thresholds result in automatic billing exceptions.

¹⁰⁶ DR 740

¹⁰⁷ DRs 200-C, 200-O, 542 – C Attachment 3 and 542 – O Attachment 3

¹⁰⁸ DR 738

¹⁰⁹ DR 536-0 and DR 536-C

¹¹⁰ DRs 797 and 802

- Each CECONY reading is system-tested to determine whether the reading is consistent with prior usage. If the reading is accepted by the system, the customer's account record is updated by posting the reading, consumption, bill amount, billing dates, and reading codes to generate a bill. On the cycle date, if no reading is obtained, or if one was obtained but rejected by the system, the system will estimate a reading if possible. If a reading cannot be estimated, the computer will generate an AIL (Account Investigation Listing) for a manual estimate, or an AIO (Account Investigation Order) for a field visit to obtain another actual reading.¹¹¹ CECONY has over 200 active AIL codes that include a multitude of conditions from zero consumption to no customer of record. Some are informational.
 - CSS generates thousands of AILs in a day. AILs are coded as priority 1 to 5. The priority basis provides CECONY the opportunity to resolve the most urgent AILs first.
 - Priority 1 AILs include the highest revenue meters and demand meters. Priority 2 AILs are residential accounts. Priority 3 AILs are referred to the field. CECONY expects a CSR to clear eleven AILs per hour. There are currently eight full time CSRs handling billing related AIOs and 11 CSRs responsible for AIOs on meters registering consumption on inactive accounts.
 - Informational AILs are coded with lower priorities.
 - CECONY has an internal standard of working all Priority 1 AILs in 30 days or less.¹¹²
- O&R's Work Flow Management System creates Work Flow Manager (WFMs) reports. WFMs include billing exceptions. O&R also has over 200 active codes for billing exceptions.
 - The system generates on average 1,400 WFMs per day. They are coded as billing and non-billing. In 2015, billing WFMs represented less than one percent of total bills.¹¹³
 - O&R has an internal standard of working 95 percent of billing-related WFMs in 60 days or less and 90 percent of non-billing related WFMs in 90 days or less.¹¹⁴
- As shown in **Exhibit IX-11**, both CECONY and O&R handle the majority of billing exceptions within their target timeframes.

¹¹¹ DR 201-C, Attachment 9

¹¹² DR 205-C and 741-C, IR 225

¹¹³ DR 741-O Attachment 4 – 28,925 WFMs in 2015, DR 205-O Attachment 1 – Meters in billing cycle – 20 billing cycles per month

Percent WFMs = $(28,925/12)/(12,839*20) = 0.9\%$

¹¹⁴ DR 205-O and 741-O, IR 226

Exhibit IX-11
Billing Exception Aging
Percent Complete within Metric

	CECONY Priority 1 AILs within 30 days	O&R Billing WFM within 60 days	O&R Non-Billing WFM within 90 days
December 2012	100.0%	97.0%	96.6%
December 2013	100.0%	96.6%	95.6%
December 2014	90.0%	96.1%	95.5%
Interim 2015	100.0%	100.0%	94.3%

Source: DR 741

- CECONY and O&R conduct regular internal audits of the billing function. While occasional improvements and corrections are found, O&R and CECONY are generally found to have adequate controls over their billing functions. Audits include:

- 2011 and 2014 Audits of CECONY's levelized payment plan.
- 2014 Audit of O&R's levelized payment plan.
- 2011, 2013, 2014, and 2015 O&R Residential Rate Verification audits.
- Over 35 CECONY Internal Audits on subjects ranging from meter exceptions, net metering, retail access, weather normalization, interest on overpayments, AMR, and late payment charges.¹¹⁵

8. Customer bills are generally clear, accurate and contain the information required by Title 16 NYCRR. Only minor exceptions were noted.

- **Exhibit IX-12** provides the content requirements for bills for both residential and non-residential customers that were tested by NorthStar.

¹¹⁵ DRs 531, 535, and 540

Exhibit IX-12
16 NYCRR Parts 11 and 13 Tested Bill Content Requirements

Residential Bill Content	Non-Residential Bill Content
Residential Bills must include: Name Address Account Number Dates of present and previous readings Type of reading (actual or estimated) Amount owed for latest period Payment due date Penalty for late payments Credits from past bills Any amounts owed and unpaid from previous bills. Must also include: Service classification Billed demand Meter multiplier constant Charges and credits that are adjustments to the base charges Budget Billing: Type of plan Total year's budget billed Dollar amount billed for tariff items Debit and credit balances Payment instructions How bill may be paid Distribution offices Authorized office or a payment agency Utility may provide pertinent information as necessary	Non-Residential Bills must generally include: Includes only services performed and itemizes charges Can provide messages and other information All Bills Name of corporation Location of office and one more business offices Service classification Name of customer, account number and address Start and end date of billing period Quantity of service billed, unit of measure, explanation of calcs. and factors and disclosure of tariffs Due date When late charges are assessed Explanation of abbreviations Telephone number Cycle Bills Registered demand Date of latest payment Assessed Late Charges Next read date Metered Service Bills Indices used to calculate Read source Meter Multiplier

Source: Title 16 NYCRR Parts 11 and 13

- NorthStar reviewed a sample of flat rate, time-of-use, demand, estimated, and budget bills for compliance with the content requirements.
- NorthStar found:
 - CECONY demand bills do not include the rate elements.
 - While there is not a compliance issue, CECONY bills include an area for customer notices. Some of these notices are general in nature and some are critical to the customer account – such as the bill has been estimated multiple times or the payment is late. As defined by CECONY, all critical messages are displayed in the Message Center in priority order before any boilerplate messages. Critical messages are not distinguished from “boiler plate” notices in the Message Center.¹¹⁶ Additionally, bills with turn-off notices have a stop sign image and bold font to draw the reader’s attention.

¹¹⁶ DRs 17, 532, 533, 534, 538, 541, 542, 738, 797, 799, 800, 801 and 802

9. CECONY and O&R are in compliance with Title 16 NYCRR Part 11 and Part 13 in regard to budget billing.

- CECONY and O&R offer levelized payment plans (budget billing) to both residential and non-residential customers. **Exhibit IX-13** provides the Title 16 requirements related to budget billing that were tested by NorthStar.

Exhibit IX-13
16 NYCRR Parts 11 and 13 Tested Budget Billing Requirements

Residential Budget Billing	Non-Residential Budget Billing
• Utilities must offer residential budget billing • Amounts to be based on 12 months of customer billing history if available, if available, or else 12-months premise history, or an estimate • Amounts require regular reviews • Commission Approval of levelized payment plans (budget billing) offered to residential customers	• Utilities must offer non-residential budget billing • Non-residential levelized payment plans (budget billing) require the following: – Methodology for establishing the levelized payment amount – Policy and methodology for comparing actual cost to levelized cost. True-ups must occur not less than twice and not more than 4 times annually – Customer bills must provide accounting of total of levelized amount paid relative to actual costs

Source: Title 16 NYCRR Parts 11 and 13

- Residential customer levelized billing is based on the most recent 12-months usage. If 12-months usage is not available, then 12-months usage for the premise is used. If neither is available, an estimate is prepared for a similar premise.
- CECONY performs true-ups every four months; while O&R performs true-ups every six months.
- The levelized payment plans are included in each Utilities' tariff – Electric Rule 12.3 and Natural Gas Rule III.8.Q of CECONY's current Rates and Tariffs and Electric Rule 7.9 and Natural Gas Rule 6.10 in O&R's current Rates and Tariffs. The levelized payment plan methodologies do not have affirmative PSC approval. The levelized payment plans are included in the PSC-approved tariffs, but the actual calculation and true-up methodology are not in the tariff.¹¹⁷
- Both utilities provide notices to customers regarding the availability of the levelized payment plans through annual bill inserts, and explain the program on their websites. Information is also provided in CECONY's bill notices. O&R has an inaccurate statement on its website regarding program requirements. The website indicates that residential customers are required to have 12 months of billing history to participate in the program.¹¹⁸

¹¹⁷ DRs 531 and 537

¹¹⁸ DR 225-O Attachment 44, DR 225-C Attachment 1, DR 737, <http://www.coned.com/customercentral/levelpayment.asp>, and <http://www.oru.com/programsandservices/paymentandbillingoptions/budgetbilling.html>

10. CECONY and O&R are in compliance with Title 16 NYCRR Part 11 and Part 13 with respect to back billing.

- CECONY and O&R have documented procedures related to back billing that are in compliance with 16 NYCRR Part 11 and Part 13.¹¹⁹ The requirements of 16 NYCRR Part 11 and Part 13 tested by NorthStar are shown in **Exhibit IX-14**.

Exhibit IX-14
16 NYCRR Parts 11 and 13 Back Billing Testing

Residential Back Billing	Non-Residential Back Billing
• Back Billing – May not charge residential customer for service longer than six months prior to first bill unless customer is culpable. – Adjustment increases over \$100 – utility must notify customer of monthly installment options. Adjustments over 12 months must be billed within four months of resolution of dispute. – Any adjustments to a bill over 12 months requires notice and reason for adjustment. – No adjustments under any circumstances after 24 months of time unless customer is culpable.	• Notice – Explanation and if exceeds 24 months why – Shall include all required information – Catch up back bills of more than one month – full detailed statement – Must include deferred payment offer • Limitations – Must bill within 12 months – Cannot reach back more than 24 months

Source: 16 NYCRR Parts 11 and 13.

- NorthStar reviewed a sample of residential and non-residential bills with back billing components:
 - Customers were billed with repayment balances indicating an offering of payment terms.
 - Bills adjusted after the time limitations were accompanied by letters of findings of theft of service, meter tampering, or other customer culpability.

11. CECONY and O&R are in compliance with NY Public Service Law Article 2 Chapter 52 – The Shared Meter Law.

- CECONY and O&R have adequate procedures to conduct shared meter investigations. Policies and procedures are in compliance with State Law, and include:
 - CECONY Procedure CSP 3-0-27
 - O&R Procedure CS-0001
 - CECONY Field Investigation Form.¹²⁰
- NorthStar reviewed a sample of shared meter investigation files and found:

¹¹⁹ DR 743

¹²⁰ DRs 543 and 805

- All meter investigations included within the sample were completed within 30 days.
- Meter investigations included in the sample were thorough and complete.
- A determination from the investigation was made in every case.
- For cases where minimal usage was found:
 - A calculation of diverted energy was provided.
 - The account was placed in the landlord's name.
 - When an agreement was established between the tenant and owner, the account was returned to the tenant's name and the copy of the agreement is on file with the utility.
 - In situations where the landlord claims to have corrected the shared meter condition, CECONY and O&R conduct another field investigation to verify the condition was corrected. A new field investigation report is added to the case history and the account is placed in the tenant's name.
- In cases where greater than minimal energy diversion was found:
 - The account was placed in the landlord's name. The landlord was assessed 12 months of historical bills plus an apportionment representing up to 6 years of the shared usage, payable to the tenant.
 - In situations where the landlord claims to have corrected the shared meter condition, CECONY and O&R conduct another field investigation to verify the condition was corrected. A new field investigation report is added to the case history and the account is placed in the tenant's name.
 - In cases of excessive cost or legal impediment to correct the shared meter condition, support documents are filed with the utility. The landlord is assessed 12 months of historical bills, payable to the tenant. The owner either entered into an agreement with the tenant, which was also filed with the utility, or the account remained in the landlord's name.¹²¹

12. Both utilities have established methods to balance the cost and effectiveness of collections.

- Although termination of a customer's service may ultimately be the most effective method of obtaining payment, it is the most expensive method for the utility, and typically for the customer as well, as the customer may be required to pay collections and reconnection fees. The amount the customer must pay to have service reconnected may also be higher than the amounts that would have been initially required to maintain service had the customer entered into an agreement to pay delinquent balances prior to termination. It is also disruptive to the customer to have service terminated.
- Electric service is typically terminated before gas service is. Reconnection of gas service requires the utility to enter the customer's premise to relight pilot lights. For

¹²¹ DRs 542, 795, 796, 798, 803, 807, 841 and IR 244

electric service, if the meter is accessible, access to the customer's home is not required to reconnect service.

- CECONY issues reminder notices and then alert notices before issuing termination notices and the associated field orders. The notices are tailored to the individual customer's behavior and payment pattern.
 - Reminder notices, alerts and final termination notices are printed on the CECONY bill; the average fully loaded cost of a CECONY field collections call is over \$77.00 per field visit.¹²²
 - CECONY tracks the effectiveness of each of the methods in generating customer payments, and has found that reminder and alert notices have a high resolution rate, as shown in **Exhibit IX-15**, allowing customers to cure their arrears at the lowest cost to the company. If the reminders and alerts are unsuccessful in generating a payment, CECONY will then follow-up with a termination notice and a field collections call.

Exhibit IX-15
CECONY Alert and Reminder Notice Cure Rates

Time Period Analyzed [Note 1]	Reminder	Alert
May 2015	84.7%	62.0%
July 2015	82.3%	62.4%
August 2015	88.7%	73.9%
September 2015	89.6%	62.3%

Note 1: Data is not historically retained. Months happened to be based on the timing of NorthStar's data requests. NorthStar has not validated these numbers.

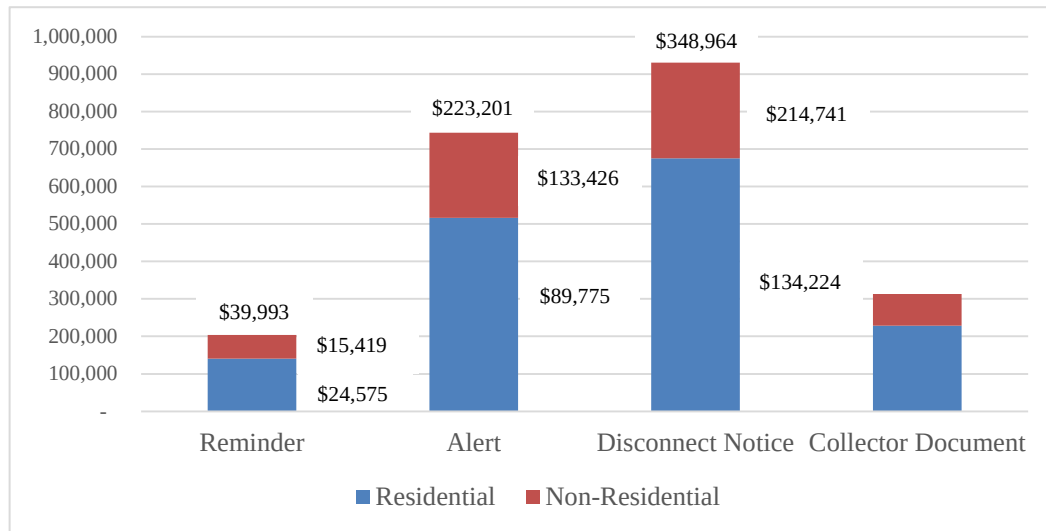
Source: DR 243-C and 759-C.

- For customers who subsequently fall into arrears within the next 12 months, logic is built into CSS to "skip" to the notice that prompted payment in the past. For example, if the alert notice prompted payment, the reminder notice will be skipped. If only the disconnect notice prompted payment, then the system will jump to the disconnect notice.¹²³ This is not a violation of HEFPA.
- **Exhibit IX-16** provides the number and associated dollars for the various CECONY collections notices for YTD June 2015.

¹²² DR 585-C

¹²³ DR 243-C

Exhibit IX-16
CECONY Notice Volumes and Associated Dollars – YTD June 2015
(\$ in Thousands)



Note: Collector document means it is eligible for field termination.

Source: 243-C Attachment 1

- O&R uses a risk-based system to determine the timing of collections activities.
 - O&R customers are rated using a point system within CIMS based on their payment history: A – good payers; B – slow payers; and, C – high risk payers. All new customers are classified as C-rated for six months until they establish a credit history with the utility. Accounts with more than 4 overdue bills are also C-rated.
 - The A, B and C ratings are used to determine the timing of collections activities.¹²⁴ A-rated customers receive a notice at 45 days; B-rated customers receive a notice at 25 days – about the same time they are receiving the next bill; C-rated customers receive a red notice at 20 days and also on the next bill.¹²⁵
- O&R also employs an aggressive outbound collections calling campaign to prompt payments. Calls are made by a vendor and include both automated and live agent calls. In 2014, the vendor contacted or left messages with 40,010 customers, took 26,853 payments and collected just over \$9 million. In the first six months of 2015, 20,291 calls were made and \$5.6 million was collected.¹²⁶ Pre-termination IVR blast calls resulted in 52,176 calls completed, just under 7 percent of those calls transferred to Kubra, O&R's payment vendor.¹²⁷

¹²⁴ DR 204-O

¹²⁵ IR 38

¹²⁶ DR 282-O, Attachment 7

¹²⁷ DR 282-O, Attachment 1

- Customers receive an automated call at 8 days and a live call after the disconnect notice expires.¹²⁸
- Customers also receive an automated payment arrangement reminder call and automated calls when the account becomes field eligible. Two attempts are made for each of these calls.¹²⁹
- Customers can make payments over the phone during the automated call.¹³⁰

13. Both utilities provide customers with time to pay their bills and work with customers to try to avoid termination.

- Following proper notification, utilities may terminate service to customers for the reasons listed in **Exhibit IX-17**.

Exhibit IX-17
Conditions Resulting in Potential Termination per 16 NYCRR

Condition – Failure to:	Residential	Non-Residential
Pay bills	Charges for services rendered during the preceding 12 months	Tariff charges due for which a proper itemized bill has been sent in the preceding 6 years
Pay Amounts Due under a Deferred Payment Arrangement	√	√
Pay for applicable equipment and installation charges associated with service initiation	√	
Pay a required security deposit.	√	√
Provide reasonable access to the premises for purposes in connection with rendering of service		√
Comply with a provision of the utility's tariff which permits the utility to refuse to supply or to terminate service		√

Source: 16 NYCRR, Part 11.4(a)(1) and Part 13.3(a)(1)

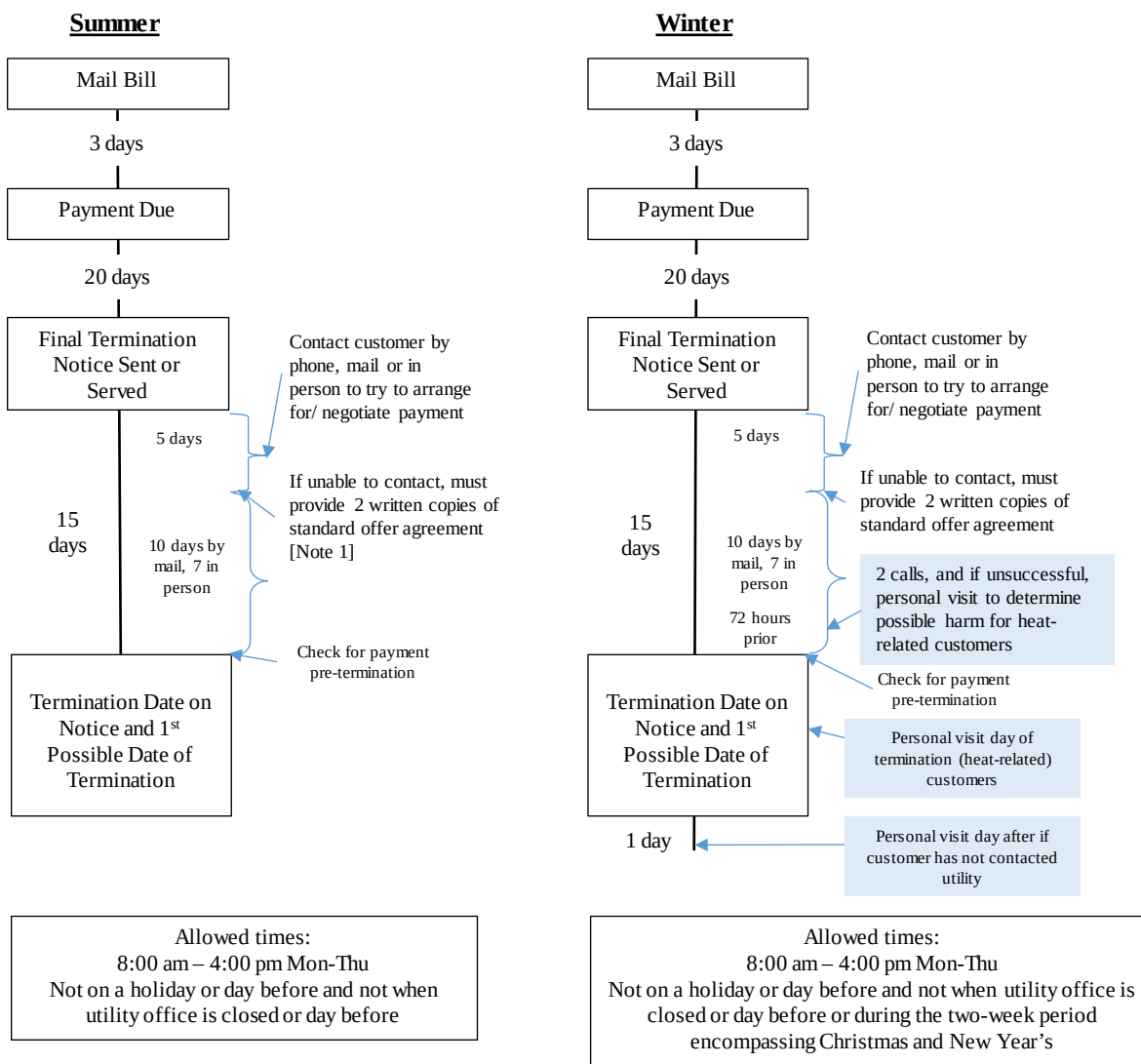
- **Exhibit IX-18** shows the required summer and winter collections timelines for NY residential customers that are not eligible for special protection. (As discussed in the Background section of this chapter, special protections are provided to certain classes of residential customers.)

¹²⁸ IR 38, DR 286-O, Attachments 4 and 5 (Live Agent Scripts)

¹²⁹ Automated Call Script (DR 286-O, Attachment 3)

¹³⁰ Automated Call Script (DR 286-O, Attachment 3)

Exhibit IX-18 HEFPA Residential Timeline – No Special Conditions [Note]



Note: Identified time durations represent the minimum amount of time between events.

Note 1: The utility may postpone a termination for 10 days for the purpose of negotiating payment terms (all seasons). The customer must be clearly advised of the postponement. If a postponement is made, the standard offer can be mailed 10 days before that date.

Source: Part 11 of 16 NYCRR

- Non-residential customers are not subject to the same protections and the utilities have greater latitude to terminate non-residential customers. In accordance with 16 NYCRR, residential customers are eligible for possible termination 45 days after payment was due (on the 46th day). Non-residential customers may be terminated between 25 and 28 days after payment was due.
- For a good paying customer, CECONY allows the customer more time before termination than Title 16 requires. As shown in **Exhibit IX-19**, the earliest a good paying CECONY residential customer would be terminated is 89 days after the first unpaid bill was issued. Good paying commercial customers would not be terminated

until day 51. For a customer with prior delinquencies, the final termination notice may show up as early as the second bill.

Exhibit IX-19
Collections Timeline – CECONY Residential and Non-Residential
Customer with a Good Payment History

Activity	Residential (No Special Protections) [Note 1]	Non-Residential
Threshold	Overdue balance $\geq$ \$60 [Note 2]	Overdue balance $\geq$ \$100
Initial Bill	Day 0	Day 0
Reminder Notice	Day 21 (on second bill)	
Alert Notice	Day 42 (on third bill)	Day 21 (second bill)
Disconnect Notice	Day 63 (fourth bill)	Day 42 (third bill)
Special Dated Notice (SDN)	Day 68	
Standard Offer Agreement (AGO) [Note 3]	Day 73	
Outbound Calls	Day 84	Day 48
Updated Disconnect Notice	Day 84 (fifth bill)	
Eligible for Field Termination [Note 4]	Day 89	Day 51
Email if Address Available	Day 89	Day 51

Note 1: Accounts which had credit notices in the previous 12 months accelerate to the next step in the process automatically at the point of notice generation. Acceleration occurs up to the disconnect notice. For non-residential, acceleration also occurs on “no cash” accounts (defined as accounts with one or no payments posted since account inception).

Note 2: For no cash accounts, the threshold is overdue balance $\geq$ \$40.

Note 3: In some cases the SDN and AGO are sent as a combined notice issued between the 68 to 73-day range.

Note 4: The fact that an account is eligible for field termination does not necessarily mean it will be terminated that day.

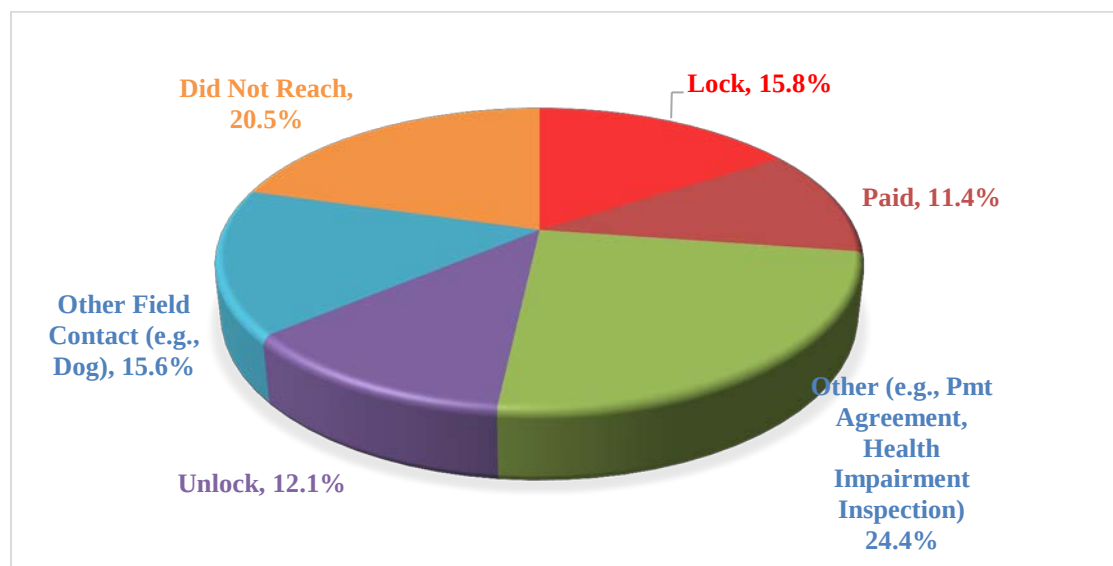
Source: DR 204-C.

- For O&R’s residential customers, the customer’s CIMS rating (see Conclusion IX-13) determines when credit action is initiated, ranging from as little as 25 days after the bill is issued on high risk accounts, to as much as 60 days after a bill is issued for historically good paying customers. Once a termination notice is issued, the customer has eight business days to cure the notice amount prior to the account being reviewed for a standard agreement offer. If the agreement is mailed to the customer, they have an additional 11 business days to accept it. If the customer is not eligible for a standard agreement, the termination notice will go past due 4 business days later. If the termination amount is unpaid, the account undergoes a review for any special protections or DSS payments and a phone call is made to the customer. Residential customers receive a pre-termination IVR call 8 days after a termination notice is sent and not paid. Certain customers will receive a field eligibility notification IVR call

and an IVR call prior to a payment agreement defaulting. Non-residential customers have 9 business days to cure a termination notice amount.¹³¹

- Very few customers actually have their service terminated for non-payment.
 - In 2014, less than 16 percent of O&R's collections field orders resulted in the suspension of service (about 9,700 customers) as shown in **Exhibit IX-20**.
 - Results were similar for 2015.¹³² In 2015, O&R's CFTs collected \$6.3 million in the field (not including subsequent payment arrangement payments), and locked \$8.1 million of account arrears.¹³³

Exhibit IX-20
O&R Collections Activity 2014 – Total Orders Issued



Source: DR 288-O, Attachment 4, DR 931-O Attachment 3

- According to CECONY, the field collectors impact (collect or cut) about 32 percent of the jobs they go out on and take payments equal to about 11 percent of the total disconnect dollars that were fielded in routes.¹³⁴
- NorthStar monitored a small number of calls at CECONY's call center in Brooklyn and O&R's call center in Spring Valley. The majority of the calls were collections calls. The CSRs worked with the customers to provide extensions or payment agreements that met the customer's needs.¹³⁵
- Field collections tries to reach the customer to obtain a payment and will take a payment or make a payment arrangement in the field to prevent disconnection.

¹³¹ DR 204-O and 590-O (Confidential)

¹³² DR 931-O

¹³³ DR 931-O, Attachment 2

¹³⁴ IR 29, CECONY verification response

¹³⁵ CECONY Call Center Side-by-Side (IR 72)

NorthStar performed ride-alongs with CECONY and O&R field collectors and observed them working with the customers to try to obtain payments the customers could make, making payment arrangements in the case of CECONY (by calling into the collections call center), and referring customers to outside agencies for assistance. Customers are provided receipts for payments.¹³⁶

14. CECONY's and O&R's payment arrangements policies and procedures are in compliance with 16 NYCRR. Due to data limitations, NorthStar was not able to confirm agreements are submitted within required time frames.

- Part 11.10 of 16 NYCRR specifies the requirements for residential deferred payment agreements:¹³⁷
 - If the customer demonstrates sufficient financial need, the utilities must offer a payment agreement of no down payment and installments as low as \$10 per month.
 - Utilities must make reasonable efforts to contact eligible customers by phone, mail or in person to negotiate a payment agreement in good faith, tailored to the customer's financial situation, before mailing the customer a written standard offer agreement.
 - The utility may require a customer to provide information to substantiate his/her financial condition.
 - If mutually agreed to, the payment agreement may provide for any amount of down payment and any installment schedule.
 - If a utility is unable to reach the customer, the written standard offer must be provided to the customer not less than seven calendar days (10 if mailed) before the earliest termination date. The offer must also be provided to the customer when payment of outstanding charges is a condition of obtaining service, for reconnection of service or following a broken payment agreement.
 - The utilities must renegotiate payment agreements if the customer demonstrates a significant change in his/her financial circumstances for reasons outside his/her control.
 - Payment agreements must contain either the mutually agreed to negotiated terms or a down payment of up to 15 percent of the amount covered by the agreement or one month's average usage (whichever is higher) and monthly installments of half of one month's average usage or 1/10th of the balance. The agreements must contain the information and language specific in Part 11.10.
 - If the customer breaks a payment agreement, the utility must send a reminder notice at least 8 calendar days before a final termination notice will be sent. If the utility has not received payment or negotiated a new agreement by the 20th calendar day after the payment was due, the utility may demand full payment of outstanding charges and send a final termination notice

¹³⁶ IRs 232 and 233

¹³⁷ 16 NYCRR, Part 11.10

- Part 13.5 of 16 NYCRR specifies the requirements for residential deferred payment agreements. In general terms:¹³⁸
 - A utility must provide a written notice offering a deferred payment agreement to an eligible non-residential customer not less than five calendar days (eight calendar days if mailed) before the date of a scheduled termination of service for nonpayment of arrears, as indicated on a final termination notice provided the customer has been a customer for at least six months and the arrears on which the outstanding termination notice is based exceed two months' average billing.
 - If a utility and a customer agree to terms of a deferred payment agreement in a telephone conversation, the utility must send the customer two fully completed copies of the agreement, signed by the utility, for the customer to sign and return.
 - A non-residential deferred payment agreement may obligate the customer to:
 - Make a down payment of up to 30 percent of the arrears on which an outstanding termination notice is based, or the cost of twice the customer's average monthly usage, whichever is greater, and to pay the balance in monthly installments of up to the cost of the customer's average monthly usage or one sixth of the balance, whichever is greater. In the event of a field termination visit, the down payment may be up to 50 percent of the arrears, or the cost of four times the customer's average monthly usage, whichever is greater.
 - Pay late payment charges during the period of the agreement.
 - Pay a security deposit in three installments, 50 percent down and two monthly payments of the balance.
 - Any non-residential customer is eligible for a deferred payment agreement except the following:
 - A customer who owes any amounts under a prior deferred payment agreement or who failed to make timely payments under a prior deferred payment agreement in effect during the previous 12 months;
 - A customer that is a publicly held company, or a subsidiary thereof;
 - A seasonal, short-term or temporary customer;
 - Customers whose demand or consumption exceeds certain limits
 - A customer who the utility can demonstrate has the resources to pay the bill, upon proper notification.
- In general, utilities are not required to provide residential or non-residential payment agreements to customers that have broken an existing agreement or that the PSC determines the customer has the resources available to pay the bill. All customers on payment agreements are obligated to make timely payment of current charges.
- The utilities' customer information systems serve as the primary control over payment agreement requirements.

¹³⁸ 16 NYCRR, Part 13.5

- For O&R, the payment agreements and reminder notices are templates stored within CIMS that users are unable to change or manipulate.
 - Letters are automatically sent based on pre-determined scheduled collection actions that are programmed in CIMS. An additional three-day buffer is built in CIMS.¹³⁹ Payment agreement reminders are automatically generated eight days prior to a final termination notice (as required by HEFPA) based on logic programmed in CIMS. Final termination notices are similarly automatically generated if payment is not received.
 - A financial information worksheet within in CIMS is filled out and used to calculate the customer's cash flow.¹⁴⁰
- CECONY's CIS notifies a CSR if a customer is eligible for a payment agreement and will calculate the terms of the agreement (down payment, due dates and the installment amounts). The CSR has the option to modify the terms of the agreement based on the discussion with the customer.¹⁴¹ Customers are asked to accept or decline the agreement and provide their consent that if the terms of the agreement are broken, collections activities will continue. Notes are required to explain why the terms were modified.
- Programming logic built into CECONY's CIS prompts an automated call to the customer and a bill message advising the customer of payment agreement eligibility. CIS automatically assigns a date when an account is eligible for termination, issues appropriate letters and notices and holds the account for the appropriate number of days before it becomes field-eligible. It also automatically generates standard agreement terms.¹⁴² CIS automatically calculates and determines whether installments will be based on average monthly usage or the applicable percent of the balance.¹⁴³
- CECONY CSRs can access a financial statement form and modify a deferred payment agreement based on a customer's financial needs or as mutually agreed upon.¹⁴⁴
- NorthStar's review of O&R's procedures, training, and call monitoring identified no violations of the residential payment agreement requirements of 16 NYCRR.¹⁴⁵ Non-residential procedures instruct a CSR to initially request a down payment of 50 percent and the balance due in four installments. If the customer cannot make a down payment of 50 percent, the CSR may offer the customer a 30 percent down payment. A 30 percent down payment is the minimum requirement under Part 13.5 of Title 16 NYCRR. NorthStar's review of CECONY's procedures, training, and call

¹³⁹ DR 202-O, Attachment 2

¹⁴⁰ CIMS screen shot, (DR 934-O, Attachment 6), CIMS Demo (IR 65) and Call Center Call Monitoring (IR 66)

¹⁴¹ DR 201-C Attachment 7, Call Center Observations (IR 72)

¹⁴² DR 934-C, Attachment 1

¹⁴³ DR 934-C, Attachment 1

¹⁴⁴ DR 934-C, Attachment 1

¹⁴⁵ DR 201-O, DR 202-O, IR 66

monitoring identified no violations of the residential or non-residential payment agreement requirements of 16 NYCRR.¹⁴⁶

- The majority of O&R's residential customers with a payment agreement are on the \$10 financial need arrangement, as shown in **Exhibit IX-21**. Very few of CECONY's customers are on the \$10 minimum agreement.

IX-21 Payment Agreements

Residential Payment Agreement Type	CECONY As of 9/30/15	O&R As of 10/16/15	O&R As of 12/31/15
\$10 Installment Payment	7,894 6.4%	4,792 58.7%	4,349 55.1%
Standard Offer Agreement	52,877 42.7%	1,047 12.8%	952 12.1%
Negotiated Agreement	63,039 50.9%	2,326 28.5%	2,590 32.8%
Total Payment Agreements	123,810	8,165	7,891

Source: DR 589-C and 591-O

- NorthStar reviewed O&R's residential standard payment agreement, negotiated payment agreement and minimum payment agreement letters and found them to contain the language required by Part 11.10 of 16 NYCRR.¹⁴⁷ Payment reminder letters also contain the required language.¹⁴⁸ NorthStar reviewed a sample O&R's non-residential agreement and found no compliance issues. O&R's non-residential payment agreements are letters, mailed to the customer specifying the terms of the agreement.¹⁴⁹
- NorthStar reviewed CECONY's residential Standard Agreement Offer (SAO) and Special Dated Offer (SDO) forms and found them to contain the language required by Part 11.10 of 16 NYCRR.¹⁵⁰ NorthStar is not able to confirm compliance with timing requirements as the dates were redacted. The SAO postcard does not contain language regarding financial need, the \$10 minimum offer or the customer's ability to modify the terms based on changes in their financial circumstances.¹⁵¹
- When CECONY sends non-residential customers a termination notice a non-residential rights insert is included. The back of the insert contains a section on deferred payment agreements with standard language notifying the customer that they may be eligible for an agreement to pay the overdue amount in installments. The

¹⁴⁶ DR 201-C, DR 202-C

¹⁴⁷ DR 934-O, Attachments 2/3, 4, and 5; DR 286-O (Confidential) Attachment 1, DR 934-O Backup Documentation for Attachment 02

¹⁴⁸ DR 934-O, Attachment 7

¹⁴⁹ DR 286-O (Confidential), Attachment 2

¹⁵⁰ DR 587-C, Attachments 1, 2 and 4. Dates were redacted.

¹⁵¹ DR 587-C, Attachment 3 and 3/31/2016 supplemental email clarification assigning correct names

section describes the eligibility/ineligibility requirements and how the payment amounts are calculated.¹⁵²

- O&R includes a notice of the potential availability of payment arrangements on its non-residential termination notices.¹⁵³
- In general, NorthStar found O&R's payment agreement forms to be more user-friendly than CECONY's.¹⁵⁴

15. CECONY's and O&R's termination notices comply in most respects with the language requirements of 16 NYCRR.

- CECONY's final termination notices are actually printed on the customer's bill. An insert fulfills a number of the regulatory notification requirements. CECONY does not consider its Special Dated Notice (SDN) to be a final termination notice and therefore does not include the insert provided with the SDN.¹⁵⁵ O&R's termination notices are separate from the bill and more distinct.¹⁵⁶
- CECONY's and O&R's final residential non-residential termination notices comply, in most respects, with the termination language requirements of 16 NYCRR as shown in **Exhibit IX-22**.

Exhibit IX-22 Residential Termination Notice Language Requirements

	CECONY		O&R	
	Residential	Non-Residential	Residential [Note 1]	Non-Residential [Note 2]
The earliest date on which termination or disconnection may occur.	√	√	√	√
The reasons for termination or disconnection, including the total amount required to be paid, and the manner in which termination or disconnection may be avoided.	√	√	√	√
The address and phone number of the office of the utility that the customer may contact in reference to his account.	√	√	√	√
The availability of utility procedures for handling complaints (or considering customer complaints prior to disconnection).	√ Billing Disputes	√ Billing Disputes	√ Billing Disputes	√ Billing Disputes

¹⁵² DR 588-C

¹⁵³ DR 286-O (Confidential), Attachment 2

¹⁵⁴ NorthStar assessment based on review of agreements

¹⁵⁵ IR 179

¹⁵⁶ DR 286-C and 286-O (Confidential), Attachments 1 and 2

	CECONY		O&R	
	Residential	Non-Residential	Residential [Note 1]	Non-Residential [Note 2]
<u>Residential Version</u> A summary, prepared or approved by the commission or its authorized designee, of the protections available under this Part, together with a notice that any customer eligible for such protections should contact the utility.	√	N/A	√	N/A
<u>Non-Residential Version</u> That commission procedures are available for considering customer complaints when a customer is not satisfied with the utility's handling of the complaint, including the address and phone number of the appropriate commission office.	√ Phone and Address	√ Phone and Address	PSC Phone Number	√ Phone and Address
<u>Residential Version</u> In addition, the notice shall have printed on its face, in a size type capable of attracting immediate attention, language conveying the following: THIS IS A FINAL TERMINATION NOTICE. PLEASE REFER TO THIS NOTICE WHEN PAYING THIS BILL. OR THIS IS A FINAL DISCONNECTION NOTICE. PLEASE REFER TO THIS NOTICE WHEN PAYING THIS BILL.	√		√ In red on face	
<u>Non-Residential Version</u> That it is a termination notice which should be brought to the attention of the utility when the bill is paid.		√		√ In red on face
<u>Non-Residential Requirement Only</u> That payment of the charges with a check that is subsequently dishonored may result in immediate termination of service without further notice, if applicable	√	√	√	√
<u>Non-Residential Requirement Only</u> That at the time the utility goes to the premises to terminate service, it may require any payment to be made with cash, certified check or money order if the customer has, within the last 24 months, paid with a check that was dishonored.		√ not specific to field visit		√

Note 1: Initial and Updated Notices.

Note 2: Final Notice and Broken Agreement Final Notice.

Source: 16 NYCRR Part 11.4 and 13.3, DRs 286-O, 286-C, 596-C, 597-C and 597-C Supplement.

16. NorthStar's testing found that O&R complies with the broken payment agreement notification requirements. NorthStar was not able to assess CECONY's compliance as insufficient data was provided.

- Utilities are able to terminate service for residential and non-residential customers that have broken payment agreements.

- For broken non-residential agreements, a final notice of termination may be sent on or after the date payment was due. It is not subject to the 20-day requirement for delinquencies. Service shall not be terminated for 8 calendar days after the notice is mailed.
 - For broken residential payment agreements, the customer must be sent a final notice of termination with the required language. The notice must be sent no more than 15 days before the possible disconnection date.
- NorthStar reviewed a sample of 19 O&R residential and non-residential customers that had been terminated for broken agreements and found the following:¹⁵⁷
 - Customers were allowed between 13 and 14 calendar days from the date of the notice (and broken agreement) to the first possible termination date.
 - Each month that a new bill was issued, customers were sent an updated termination notice indicating that they were still eligible for termination for the prior non-payment and would be eligible in 9 calendar days for non-payment of the updated bill amount.
 - Internal policies allow customers three additional days before they are internally considered eligible for cut-off.
 - Although not required by regulation, O&R calls the customer (automated call) on the termination notice expiration date. They also call the customer during the day and evening before the internal eligibility date. A third call is placed by the IVR when the account is field eligible.
 - The dates between when the customer was initially eligible for termination (per the notice) and the date service was ultimately terminated ranged from 4 days to 86 days, depending on a variety of factors (e.g., collections priorities, access issues, renegotiated arrangements which were subsequently broken).¹⁵⁸
 - O&R's broken payment agreement termination notices contain the required language."¹⁵⁹
 - If a residential customer breaks a payment agreement, O&R reviews the account to determine if the customer is eligible for another agreement.
 - NorthStar's testing of CECONY was limited by a lack of data. Similar to its request of O&R, NorthStar asked CECONY for detailed records on the collections timeline for the 10 most recent residential and 10 most recent non-residential customers with broken payment agreements whose service was ultimately terminated. According to CECONY, it does not retain the information requested, and could only provide sample letters.¹⁶⁰
 - As NorthStar did not have actual customer records it was unable to confirm compliance with the timing requirements.

¹⁵⁷ NorthStar testing, DR 590-O, Attachments 11-20 (Confidential). One sample file had documentation issues.

¹⁵⁸ Dates were 23, 85, 14, 38, 30, 86, 85, 46 and 4

¹⁵⁹ 16 NYCRR Part 13.3(b)(vi), Supplemental information provided during fact verification (notice printed on stock paper)

¹⁶⁰ DR 590-C

- The sample broken agreement notices contained the required language..¹⁶¹

17. Both utilities have controls to ensure they comply with the special protection requirements of HEFPA.

- **Exhibit IX-23** provides a breakdown of the number of LSE, EBD and medical hardship customers (together concern customers) for each utility relative to its residential customer base.

**Exhibit IX-23
LSE and Concern Customers**

Classification	CECONY (As of 2/5/16)	O&R (As of 12/31/15)
LSE	5,908	757
Medical Hardship	2,235	0
EBD	120,797	20,459
Total	128,940	21,216
Approx. Residential Customer Base	2,930,420	231,674
Percent	4.4%	9.2%

Source: DR 921-C and 921-O.

- CECONY's and O&R's policies and procedures are consistent with, or more protective than, the HEFPA requirements.
 - O&R requires medical hardship customers to demonstrate an inability to pay when requesting a certificate renewal for an additional 30 days. An O&R medical hardship account remains in a pending status for 10 calendar days to allow the customer time to provide the required documentation. HEFPA requires that the utility allow five days. CECONY customers are advised that the documentation must be provided in five days but the account also remains in a pending status for 10 days. For CECONY the initial medical certification lasts 90 or 180 days depending on the medical classification.¹⁶²
 - O&R does not require a customer to demonstrate an inability to pay in order to be considered an LSE customer, although it could require this under HEFPA.¹⁶³ On an annual basis, customers are asked to complete a financial statement; however, O&R will not deny an LSE customer LSE status based on ability to pay.¹⁶⁴
 - NorthStar reviewed O&R's Medical Hardship and LSE procedures and training and found no violations of the Special Protection requirements of HEFPA. The procedures detail the system controls and the roles and responsibilities of the various organizations involved.¹⁶⁵

¹⁶¹ DR 590-C, Attachments 1 and 3, DR 590-C Supplement

¹⁶² Procedure 3-1-8 (DR 202-C, Attachment 60)

¹⁶³ DR 922, HEFPA

¹⁶⁴ DR 923-O

¹⁶⁵ DR 922-O, Attachment 1, DR 928-O, Attachment 1

- NorthStar reviewed CECONY's medical hardship and LSE procedures and found no violations of HEFPA. Procedures detailed the roles and responsibilities of the various groups involved.¹⁶⁶
 - CECONY's credit database (which is used to separately track medical hardship accounts) automatically reviews the population of medical accounts and sends the customer a re-certification letter after 60 days. If CECONY is not contacted by the customer, the medical coding is removed on day 90. CECONY expanded the time frame for recertification since it became a hardship on the customer to visit his/her doctor every 30 days for a recertification letter.¹⁶⁷
- NorthStar reviewed CECONY's and O&R's procedures and found no violations of the HEFPA provisions regarding EBD customers and adequate process to attempt to classify EBD customers.
 - If during a call, an O&R customer mentions anything that indicates they may be EBD, the CSR should go through the EBD script with the customer. If written or electronic correspondence indicates the customer may be EBD, the call center contacts the customer and if they are unable to reach them, a field representative is sent out to investigate.¹⁶⁸ As discussed below, O&R CSRs are required by CIMS to go through the EBD script in order to initiate service.
 - During the live agent calls performed prior to termination of a residential customer in the winter and summer, the O&R vendor conducting the call will attempt to determine if the customer is EBD and code the account accordingly.¹⁶⁹
 - If collections or meter reading personnel identify an EBD account in the field they will issue the required referrals.¹⁷⁰
- The utilities customer information systems serve as a significant point of control, although there are opportunities for improvements if the utilities convert to a new system.
- CECONY LSE customers are coded as such in CSS.¹⁷¹ This information shows up in the credit screen for each account. "Concern" customers are similarly coded within the system.¹⁷²
- At service turn-on, CECONY CSRs are prompted to ask the applicant a number of questions to determine whether special protection requirements apply. The

¹⁶⁶ DR 922-C, DR 202-C, Attachments 60 and 63

¹⁶⁷ DR 924-C

¹⁶⁸ Customer Service Organization Joint Procedure – 0002 (DR 928-O, Attachment 2)

¹⁶⁹ DR 286-O, Attachment 5

¹⁷⁰ DR 286-O, Attachment 5

¹⁷¹ CIS Demo (IR 70) and DR 367-C (Confidential)

¹⁷² CIS Demo (IR 70) and DR 367-C (Confidential)

CSR cannot complete the service order without providing the following information.¹⁷³

- If they, or someone in the household, use life-sustaining equipment such as an infant apnea monitor. (Coded as LSE)
- If they, or someone in the household, are over 62, blind or disabled (EBD). (Coded as Concern).
- At service turn-on, O&R CSRs must perform an EBD inquiry or they cannot proceed with the turn-on in CIMS. If a customer refuses to answer it is noted in the comments. O&R sends an annual mailing to its customers on the benefits of the program.¹⁷⁴
- There are opportunities for improvements in O&R's CIMS LSE controls.
 - Determination as to whether a customer is LSE is handled through training and is not a system required input in the same way as EBD.
 - Within CIMS (O&R), the LSE code could be removed by anyone with system access. Similarly, there are no controls to prevent a user from manually issuing a lock for non-payment order on an EBD or LSE customer.¹⁷⁵
- Both utilities tag meters as LSE.
 - CECONY LSE customer meters are tagged with a white seal to minimize the potential for a turn-off-in-errors. Maps and records are also updated with the location of the LSE customer.¹⁷⁶
 - O&R meters are also tagged as LSE, and the field performs an annual review to ensure the meters are tagged with the red seal. Customers are required to recertify annually, but the codes do not automatically drop off the account.
- At NorthStar's request, CECONY pulled an extract from CSS of all heat-related customers scheduled for termination in December 2015, the date they were scheduled for termination, the data and method of the pre-termination required 72-hour contact, the results of the termination attempt and whether the customer was back on by noon the following day. Customers were contacted well in advance of the 72-hour requirement.¹⁷⁷
 - 1,386 heat-related customers were scheduled for termination;
 - CECONY was unable to contact most customers (1,205) during the field interview; 2 reported no hardship via phone interview and 179 reported no hardship during the field interview'
 - The average days between the 72-hour notification and the scheduled termination date was 23 days, the minimum was 6 days and the maximum was 56 days;

¹⁷³ CIS Demo (IR 70) and DR 367-C (Confidential)

¹⁷⁴ CIMS Demo (IR 65)

¹⁷⁵ CIMS Demo (IR 65) and 7/22/15 clarification email from O&R

¹⁷⁶ Procedure 3-1-8 DR (202-C, Attachment 63)

¹⁷⁷ DR 926-C

- Of the 1,386 heat-related customers, 952 were not terminated due to access issues;
 - Of the 434 that were terminated; 153 had not reconnected by noon the following day. Onsite inspections were conducted for all but one of them the following day, generally between noon and 2:00 pm. For the remaining account, the inspection was conducted on the second day.
- Both utilities contact concern customers in the event of an outage.
 - During its ride-alongs, NorthStar observed customers field collectors conducting EBD interviews and attempting to determine if medical hardship conditions existed.¹⁷⁸ All collectors displayed sensitivity to the customers.

18. Although it is not specifically required, both utilities have special handling procedures for other sensitive accounts.

- CECONY customers handled by the CCG group (e.g., hospitals, municipalities, large customers) are coded as such in CSS. With the exception of an emergency, only the CCG organization can make changes to a CCG customer's account. CCG customers receive the same collections notices as other non-residential customers but are not automatically sent to the field for termination. The accounts are reviewed and worked by the CCG organization who must manually issue a "collect or cut" order for the account to become field-eligible.¹⁷⁹
- O&R has a similar process for large or sensitive accounts (e.g., large power, hospital, municipalities).¹⁸⁰

19. Both CECONY and O&R have established processes for handling customer inquiries and complaints.

- Most CECONY customer inquiries are addressed by a CSR within Customer Assistance. As needed, the inquiry/complaint may be escalated to successively higher levels of management within the Customer Operations Contact Center if the customer is dissatisfied, as shown in **Exhibit IX-24**. CECONY does not consider these "complaints."¹⁸¹

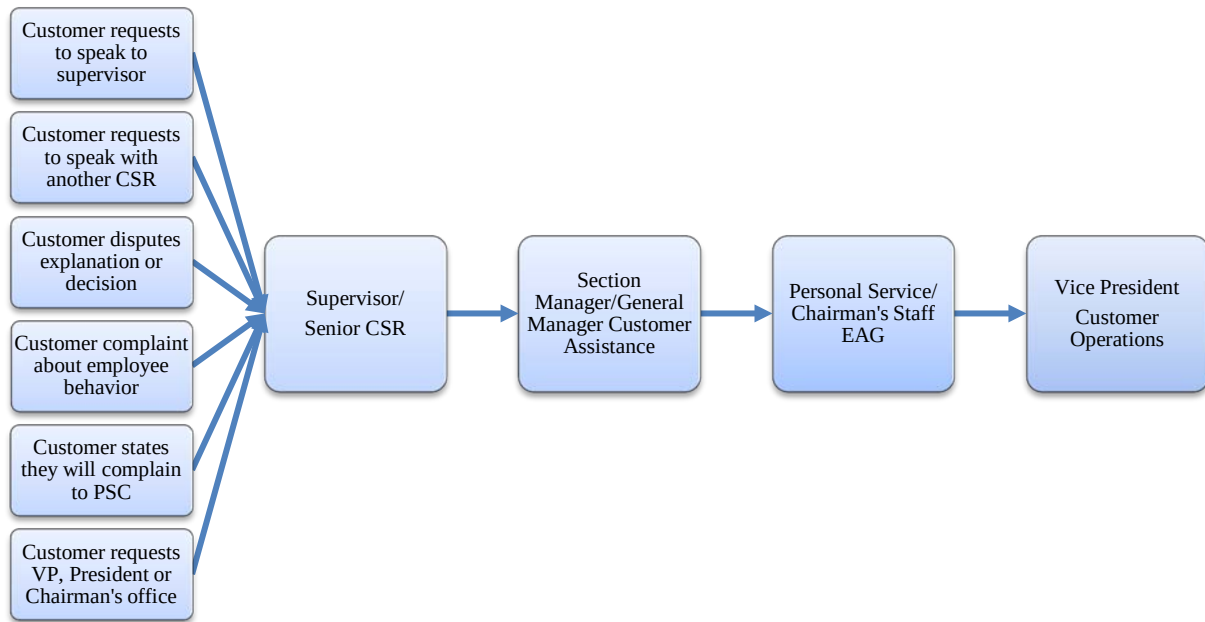
¹⁷⁸ CECONY and O&R collection ride-alongs (IR 232 and 233)

¹⁷⁹ CIS Demo (IR 70) and DR 366-C (Confidential)

¹⁸⁰ IR 38

¹⁸¹ DR 207-C, November 15, 2015 discussion with Audit Project Manager.

Exhibit IX-24 CECONY Process for Escalating Customer Inquiries



Source: Team Meeting Training (DR 207-C Attachment 5).

- CECONY defines a complaint as an instance in which the CSR is unable to resolve the issue and refers the case to the Personal Service Group within Customer Assistance for investigation.¹⁸² CECONY has an internal standard for the resolution of all Personal Service cases of 95.9 percent within 30 days. CECONY has consistently met this standard.¹⁸³ During the period January 6, 2014 to September 1, 2015, Personal Service resolved almost 36,000 complaints/inquiries in an average of 13 days.¹⁸⁴
 - Inside or field Personal Service representatives are assigned to investigate each case as appropriate. If the complainant happens to be a large customer account handled by CCG, CCG will handle the investigation rather than Personal Service.
 - If Personal Service identifies a shared meter condition, the case is transferred to EAG within Specialized Activities for further processing.¹⁸⁵ Shared meter cases are discussed in Conclusion XI-11.
- At CECONY, Executive Complaints (complaints sent directly to the Chairman, CEO, President, SVP, or other officer-level personnel) that pertain to Customer Operations

¹⁸² DR 207-C

¹⁸³ DR 207-C and DR 19-C, IR 227

¹⁸⁴ DR 530-C Attachment 2

¹⁸⁵ IR 227

- are handled by EAG.¹⁸⁶ CECONY's standard for executive complaints is that 100 percent of executive cases be completed within 30 days.¹⁸⁷
- Each complaint is logged, reviewed, and assigned to the appropriate department and employee.
 - CECONY attempts to first reach the customer by phone within 2 business days.¹⁸⁸ An initial written acknowledgement is to be sent within seven days with the final response provided within 30 days and signed by the Vice President Customer Operations or delegate.¹⁸⁹ CECONY met this target in 2013 and 2014, and as of September 2015 was on track to meet the target in 2015.¹⁹⁰
 - The account is individually monitored by an EAG supervisor for procedural compliance, and outcomes are documented with final letters to the customer.
 - Upon completion of the process, each case is reviewed and approved by the EAG Section Manager, the General Manager of Specialized Activities, and the SVP Customer Operations.
- NorthStar reviewed a sample of CECONY Executive Complaints and found the following:¹⁹¹
 - All were concluded within the required 30 days.
 - Acknowledgement letters were sent out as required.
 - Cases were thoroughly investigated and included a review of calls, prior history and other communications.
 - Documentation was good.
 - Where applicable, training and feedback to the call center was provided.
 - EAG also handles complaints filed with the Commission or from other third-parties.¹⁹² **Exhibit IX-25** shows the composition of executive and third-party complaints handled by EAG. The vast majority of complaints come from rate consultants. Rate consultant complaints include contesting specific bills or rate classifications.¹⁹³

¹⁸⁶ IR 231. Non-Customer Operations issues are sent to the respective Departments for processing.

¹⁸⁷ DR 207-C. 206-C, 592-C

¹⁸⁸ IR 231

¹⁸⁹ Corporate Policy Statement 100-5 (DR 557-C), DR 207-C (the standard is 100% within 30 days).

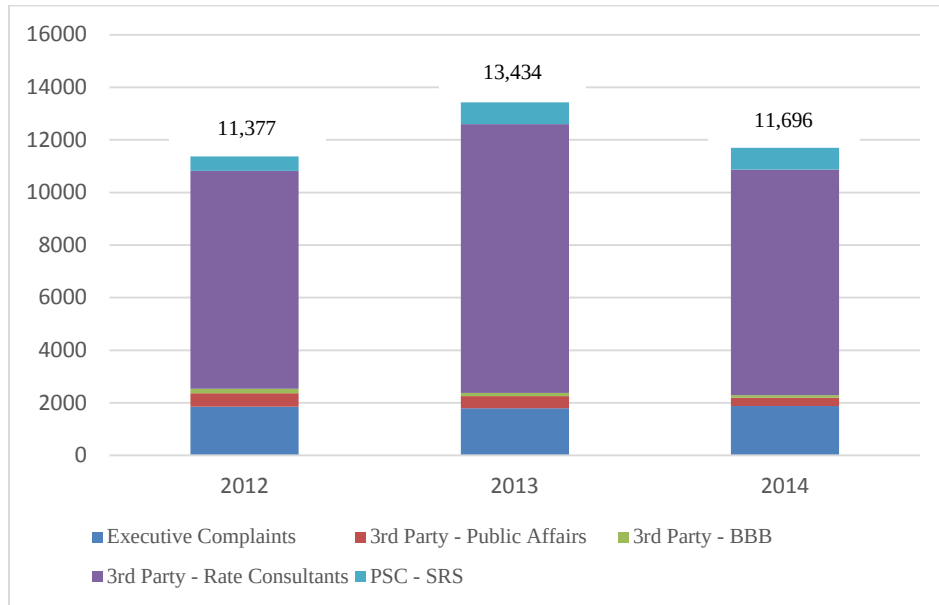
¹⁹⁰ DR 207-C. 206-C, 592-C

¹⁹¹ IR 242 (Reviewed 18 cases previously selected by NorthStar – DR 386-C), DR 843 (copies of two case files)
Confidential Response

¹⁹² DR 207-C

¹⁹³ DR 207-C

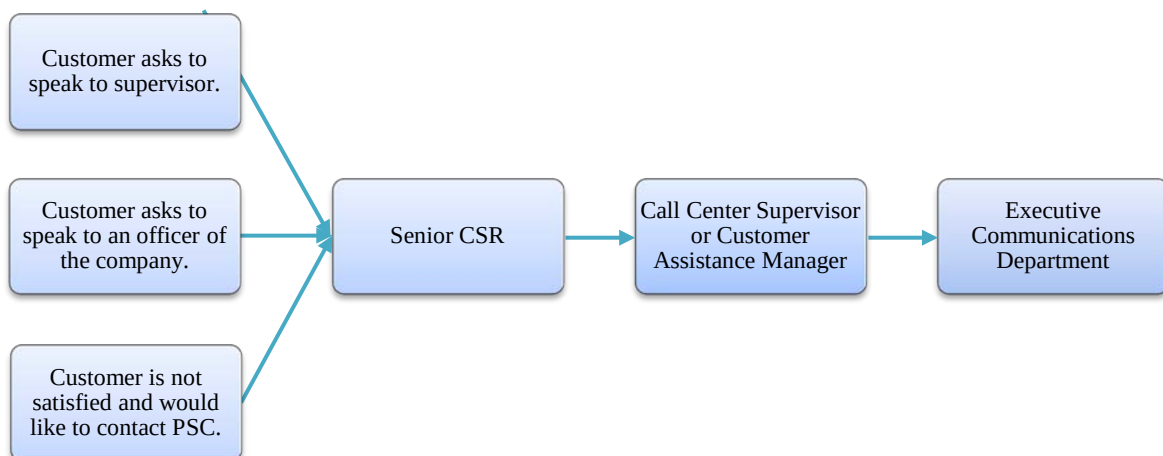
Exhibit IX-25 CECONY – Executive and Third Party Complaints



Source: 208-C and 208-C Supplement.

- Similar to CECONY, O&R complaints may be received by email, mail, fax or at an office, but are generally received by the contact center. If a CSR is unable to resolve a customer's concern, they will transfer the customer to a Senior CSR (SCSR), followed by a Call Center Supervisor or Manager, and from there to a representative from the Executive Communications Department (ECD) as shown in **Exhibit X-26**.

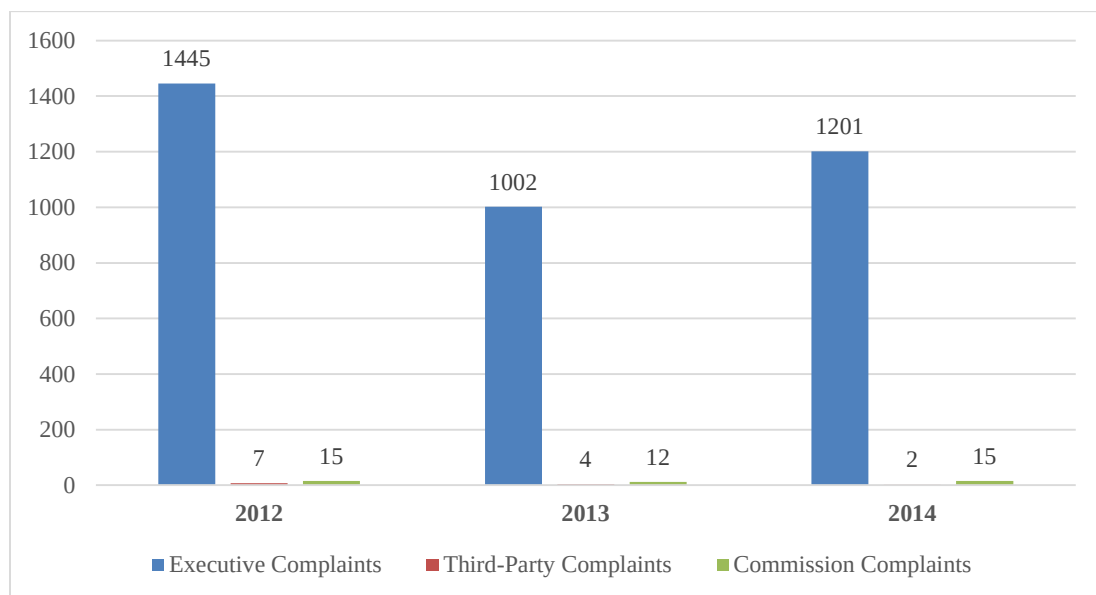
Exhibit IX-26 O&R Escalated Customer Inquiries



Source: DR 207-O Attachment 2: Customer Service Procedure.

- O&R's procedures require that if an SCSR or Supervisor is unable to take an escalated call immediately, they are to call the customer back within one hour.¹⁹⁴ In practice, call backs are generally made within 24 hours.¹⁹⁵ If the customer asks to talk to an executive or officer of the company the call should be forwarded immediately to a Supervisor, Manager or ECD. CSR feedback is provided on escalated calls.
 - In 2014, O&R processed 1,772 escalated calls.
 - From January through September 2015, O&R processed 702 escalated calls.¹⁹⁶
- O&R ECD staff process all Executive Officer and PSC complaints, whether they are Customer Operations-related or not.¹⁹⁷ Complaints are noted on the customer's account in CIMS and are tracked in an Access database. **Exhibit X-27** provides the sources of ECD complaints from 2012-2014. The vast majority are executive complaints.
- For the period January 1, 2014 to September 21, 2015, O&R processed executive hotline calls, third-party and executive complaints, and PSC complaints (SRS and QRS) in about 2 days, on average.¹⁹⁸

Exhibit IX-27
O&R Executive and Third Party Complaints



Source: DR 208-O

¹⁹⁴ DR 207-O Attachment 2

¹⁹⁵ DR 530-O

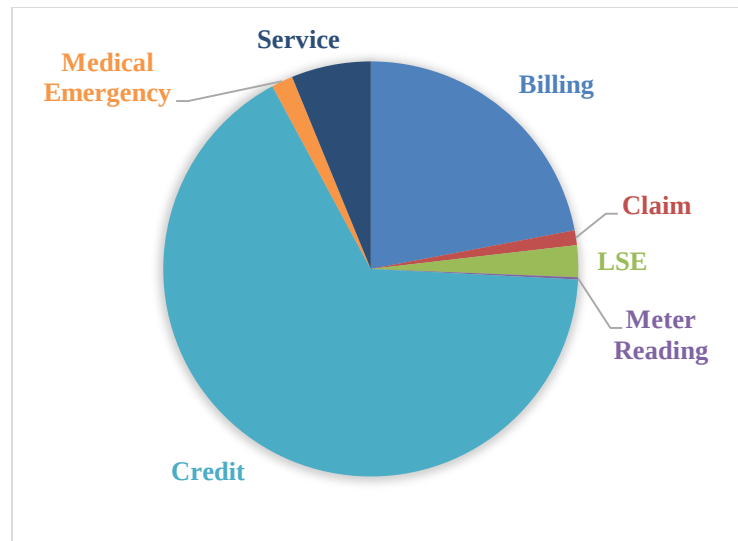
¹⁹⁶ DR 530-O Attachments 1 and 2. Response times were not included in the DR.

¹⁹⁷ DR-202-O, Attachment 123, DR 207-O

¹⁹⁸ DR 529-O (Confidential)

- The majority of O&R's PSC and Executive complaints are billing and credit-related as shown in **Exhibit IX-28**.

Exhibit IX-28
O&R PSC and Executive Complaints -2014



Source: DR 529-O Confidential Response. PA PUC and NJ BPU complaints were eliminated as were compliments.

- NorthStar reviewed a sample of six O&R Executive Complaints and found that O&R either responded to the customer via phone or in writing; cases were investigated and with the exception of the case responded to via phone call, documentation was adequate.¹⁹⁹
- Training and procedures exist for both call centers in the handling of customer inquiries and complaints.²⁰⁰
- Both utilities have appropriate controls for preventing collections activities while complaints are being investigated as required by HEFPA. Accounts are specifically coded within the customer information/billing system to prevent credit action.²⁰¹

20. Both CECONY and O&R meet PSC complaint requirements.

- The PSC sets forth escalated complaint (SRS) rate requirements for the utilities. Failure to achieve these targets results in financial penalties. The 12-month escalated complaint rate represents the average number of escalated complaints received per

¹⁹⁹ DR 869-O Confidential

²⁰⁰ DR 202, DR 207-C, DR 207-C Attachment 5, 6 and 7, 207-O Attachment 2, 557-C

²⁰¹ DR 750-C (for CECONY held as part of IR 231), DR 793-C. DR 750-O. NorthStar also observed a field collections call on a customer claiming to have a pending PSC Complaint. Immediately after the field call, CECONY provided NorthStar with the letter from the PSC to the customer indicating that the case had been closed and the customer was eligible for field collections.

month per 100,000 customer accounts. This rate is also used as a customer service KPI by the utilities.

- The PSC SRS required rates and penalties for CECONY and O&R are shown in **Exhibit IX- 29**.

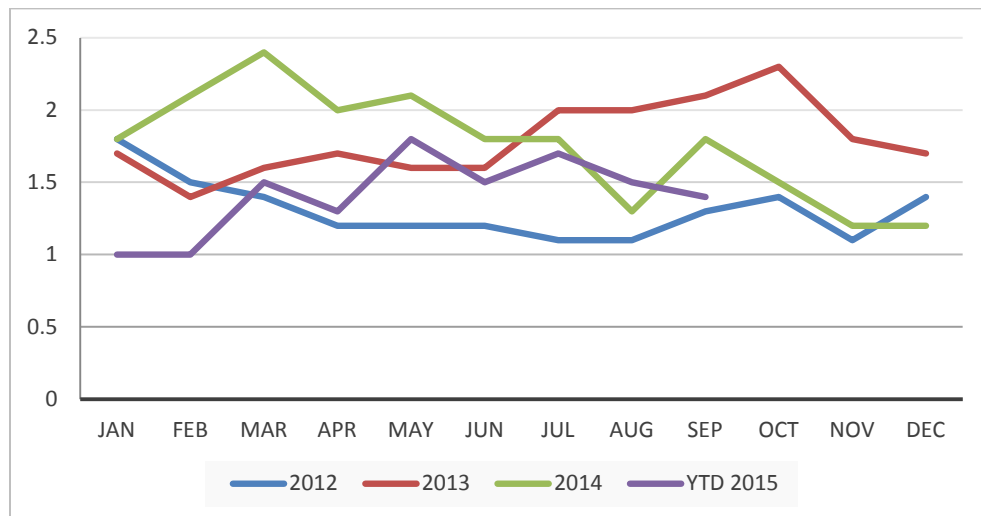
Exhibit IX-29
PSC Escalated Complaint Rate Requirements and Penalties

SRS Complaint Rate	Penalty
CECONY	
≤ 2.3	No penalty
$>2.3 - \leq 2.6$	\$2 million
$<2.6 - \leq 2.9$	\$5 million
>2.9	\$9 million
O&R	
<1.8	No penalty
$\geq 1.8 - <1.9$	\$150,000
$\geq 1.9 - <2.0$	\$300,000
≥ 2.0	\$500,000

Source: DR 9-B, Attachment 1.

- CECONY's EAG receives daily emails from the PSC with complaints and associated case numbers. EAG then assigns each case to an SCSR and attempts to settle or resolve the case. SRS cases are tracked via a Microsoft Access based dashboard and information and outcomes are forwarded PSC for permanent records. CECONY consistently meets the PSC requirement of a complaint rate of less than 2.3 per 100,000 customers as shown in **Exhibit IX-30**.

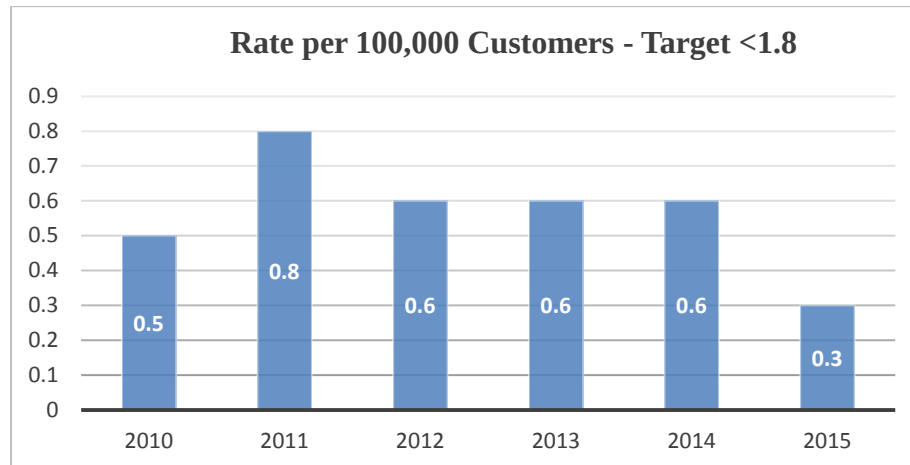
Exhibit IX-30
PSC Complaint Rates – CECONY



Source: DR 19-C and 548-C

- O&R's ECD Staff receives PSC cases via phone, email and fax. Cases via email are available in the O&R ECD mailbox located in Microsoft Outlook. Cases faxed over are available in the Customer Support Operations fax folder also located in Microsoft Outlook. An ECD staff member reviews these folders every 30 minutes during normal departmental business hours.²⁰² O&R consistently meets the PSC complaint requirement as shown in **Exhibit IX-31**.

Exhibit IX-31
PSC Complaint Rates – O&R

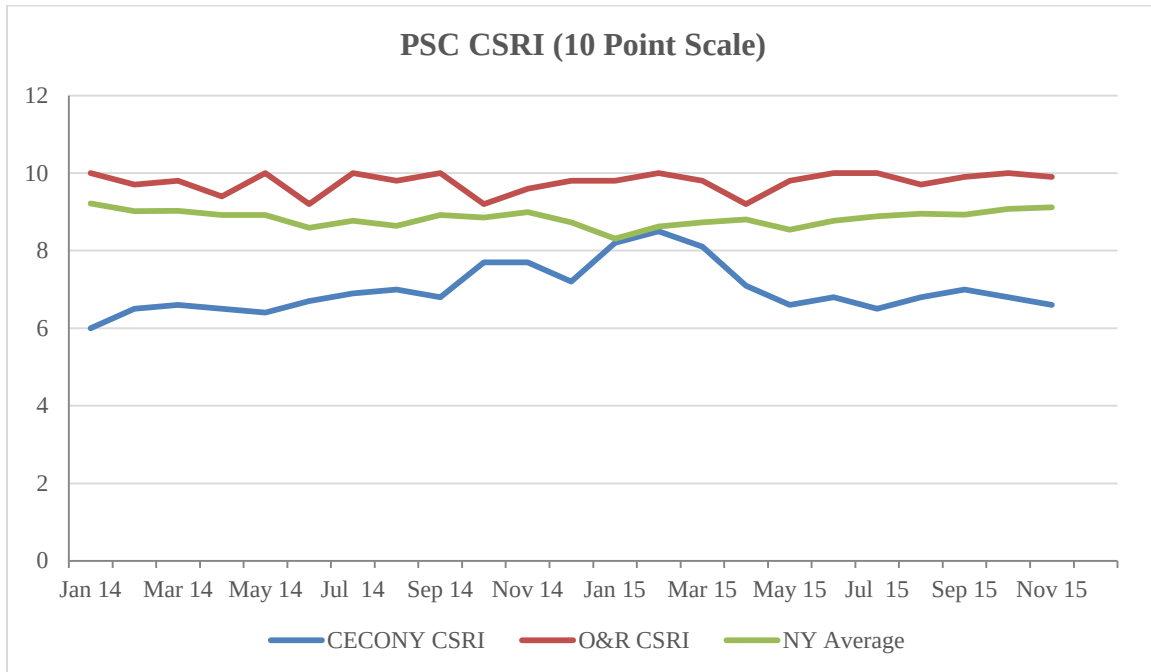


Source: DR 19-O, Attachments 15-19, Letters for CSPI 2010-2014, New York Department of Public Service, Consumer Complaint Statistics – Office of Consumer Services, December 2015
<http://www3.dps.ny.gov/W/PSCWeb.nsf/All/448C499468E952C085257687006F3A82?OpenDocument>.

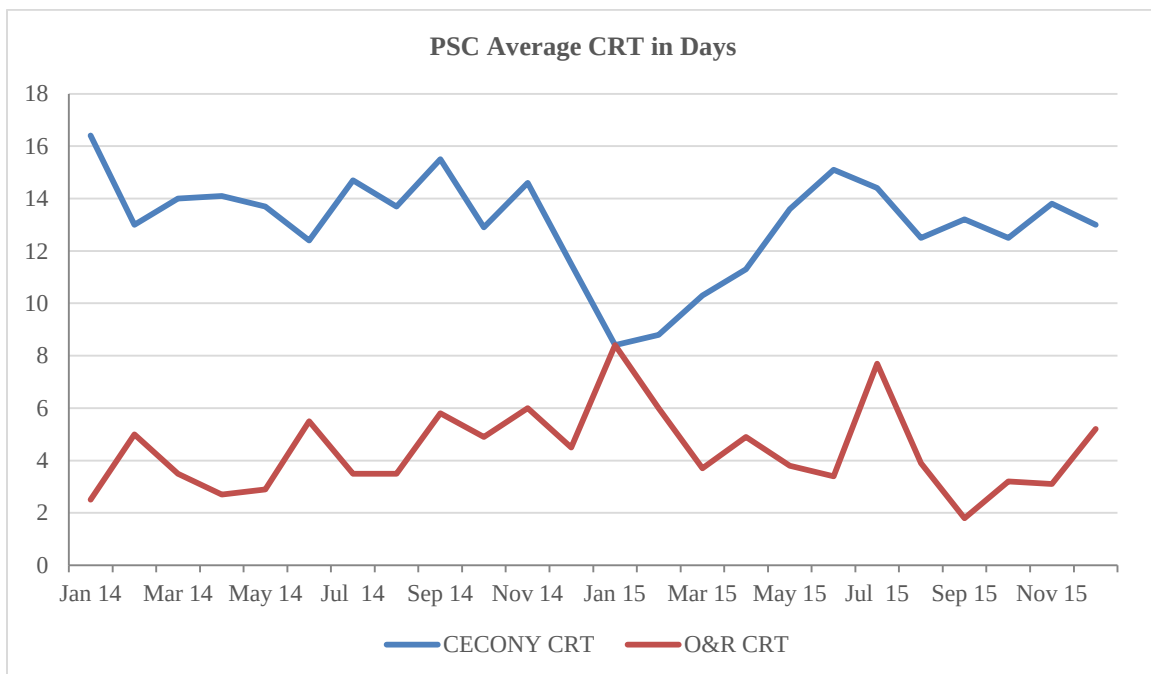
- The PSC maintains consumer complaint activity statistics on its website. The metrics include the number of initial inquiries (QRS), the number of escalated complaints (SRS), average complaint response times (CRT), and an overall Customer Service Response Index (CSRI) that is a combination of four metrics to quantify overall customer service and responsiveness.
- O&R has had consistently high CSRI numbers during the time analyzed (January 2013 – December 2015). On a 10-point scale, O&R's CSRI has been between 9.0 and 10.0 with a CRT of less than 10 days. CECONY, by comparison has a lower CSRI and longer CRT, ranking lower when compared with other utilities, as shown in **Exhibit IX-32**. CECONY's CSRI consistently ranks at the lower end of the NY electric and gas utilities.

²⁰² DR 202-O Attachment 20

Exhibit X-32 PSC Complaint Service Levels – CECONY and O&R



Source: New York State Department of Public Service, Consumer Complaint Statistics.



Source: New York State Department of Public Service, Consumer Complaint Statistics.

21. Both utilities are required by the PSC to achieve targeted levels of customer satisfaction (as defined by agreed-upon surveys) or risk the payment of penalties. Both utilities achieved customer satisfaction survey targets during the period 2010 to 2014.

- Currently, O&R is required by the PSC to achieve a target satisfaction level of greater than 89 percent of customers that are somewhat or very satisfied or pay a penalty of up to \$450,000, as shown in **Exhibit IX-33**.

Exhibit IX-33
Customer Satisfaction Requirements – O&R (2012-2014)

PSC Requirement -2012-Present (Satisfied or Very Satisfied)	Penalty
> 89%	No penalty
≤ 89.0%	\$150,000
≤ 88.0%	\$300,000
≤ 87.0%	\$450,000

Source: DR 9-B, Attachment 1.

- O&R conducts monthly telephone surveys (performed by a vendor) of customers who have recently had contact with the call center.
 - Prior to 2012, O&R conducted Business and Residential surveys and was required by the PSC to achieve Customer Assessment Scores of 6.73 (Business) and 6.99 (Residential) in 2010 and 2011.²⁰³ The 2010 and 2011 surveys were conducted by Eagle Bay Consulting.²⁰⁴ The scores were a composite of a number of factors including company attributes, energy delivery, bill qualities and customer relations.²⁰⁵
 - In 2012, O&R began using XZAM Corp to conduct a phone survey of customers who recently contacted O&R with an issue or request.²⁰⁶ Although the survey asks a variety of questions, the overall score is based on one question: “how satisfied were you with the way Orange and Rockland’s Customer Service Representative handled your recent issue/request.”²⁰⁷
- **Exhibit IX-34** provides O&R’s actual performance relative to target for the period 2010 – 2014.

²⁰³ DR 9-B Attachments 7-11.

²⁰⁴ DR 19-O Attachment 15

²⁰⁵ Relative weighting varied in the business and residential surveys (DR 19-O Attachment 15)

²⁰⁶ DR 19-O Attachment 17

²⁰⁷ DR 203-O Attachments 1 and 2

Exhibit IX-34
O&R Customer Satisfaction Performance 2010 – 2014

Customer Satisfaction Measure	Actual	Target	Penalty Paid
2010 Residential Customer Assessment Score	7.18	6.99	None
2010 Business Customer Assessment Score	6.93	6.73	None
2011 Residential Customer Assessment Score	7.13	6.99	None
2011 Business Customer Assessment Score	7.21	6.73	None
Methodology Change to Percentage of Customers Satisfied			
2012 Combined (Somewhat to Very Satisfied)	94.9%	89.0%	None
2013 Combined (Somewhat to Very Satisfied)	96.4%	89.0%	None
2014 Combined (Somewhat to Very Satisfied)	94.9%	89.0%	None

Source: DR 9-B Attachments 7-11 and DR 19-O Attachments 15-19.

- CECONY conducts PSC-required customer satisfaction surveys twice a year during the 2nd and 4th quarters. These are telephone interviews, conducted by an outside vendor, of customers who contacted CECONY either by phone or by visiting one of the walk-in centers. These surveys cover four types of contact: Electric Emergency Calls, Gas Emergency Calls, Non-Emergency Calls, and Visitor Inquiries at customer walk-in centers. The results of the 2nd and 4th quarter surveys are averaged and then compared to the average of the KPI targets. CECONY's KPI target for each survey, the PSC targets, and the associated penalties are shown in **Exhibit IX-35**. CECONY could be penalized as much as \$21.3 million for not achieving its regulatory targets related to satisfaction of callers, visitors, and emergency contacts.

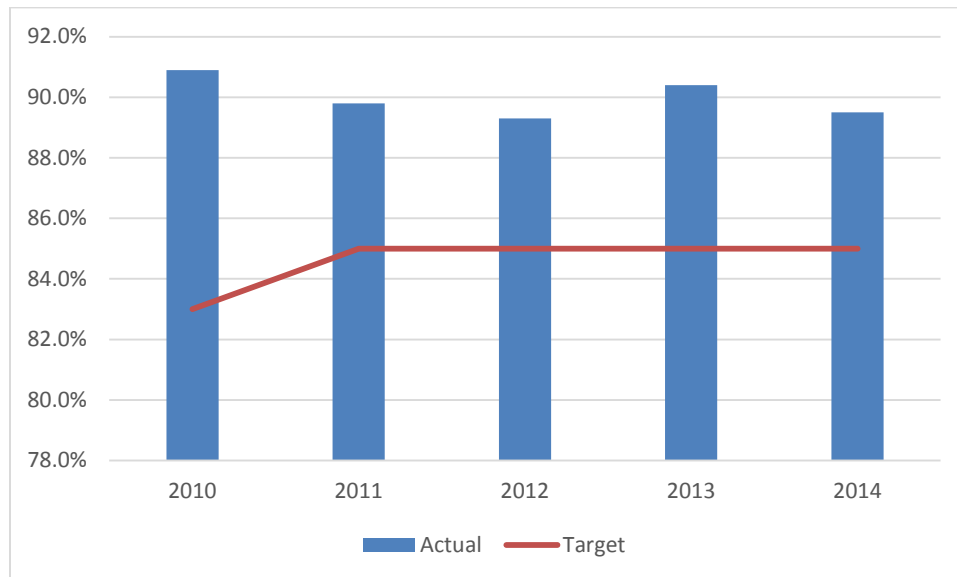
Exhibit IX-35
PSC Customer Satisfaction Requirements – CECONY

Survey	Internal KPI Target	PSC Penalty Threshold	Penalty
Electric Emergency Calls	85.0	79.0	\$6.0 million
Gas Emergency Calls	88.1	88.1	\$3.3 million
Non-Emergency Calls	84.0	82.0	\$6.0 million
Visitors	84.0	84.0	\$6.0 million
Total Penalties			\$21.3 million

Source: DR 9-B, Attachment 1.

- The four PSC customer satisfaction measures are also aggregated into one summary performance measure. **Exhibit IX-36** provides CECONY's actual customer satisfaction performance for the period 2010-2014, based on the aggregated customer satisfaction measure

Exhibit IX-36
CECONY Customer Satisfaction Performance versus PSC Target 2010-2014



Source: DR 9, Attachments 2-6.

22. There are opportunities to modify the emergency contact satisfaction indices to provide a better measure of overall satisfaction. Modification of the survey calculation methodology would require a corresponding adjustment to the targets.

- CECONY uses a Customer Contact Satisfaction Index (CCSI) to assess performance relative to the PSC target for both the gas and electric emergency contact surveys. The CCSI is a composite measure of ten customer satisfaction survey components, reflecting overall impression of emergency callers' experiences with the Customer Assistance Center (CAC) representatives and field service employees.²⁰⁸ The survey mechanism and regulatory targets were established during rate proceedings.
- NorthStar's review of the survey revealed that although all elements are equally weighted, the CCSI has more elements related to representative knowledge, responsiveness and attentiveness, rather than overall satisfaction. Overall satisfaction is only one of the ten elements comprising the CCSI.
- **Exhibit IX-37** provides a comparison of the CCSI Gas and Electric index score (for emergency contacts) and the response to the overall question: "How satisfied were you with the way your problem was handled by Con Edison?" The response to the

²⁰⁸ DR 203-C Attachment 1. Both surveys include the following nine factors: Able to speak to rep, first telephone rep said he/she could help, field rep arrived within reasonable time period, telephone rep was courteous, telephone rep seemed knowledgeable, telephone rep was concerned about my problem, call was picked up promptly, field rep resolved problem, overall satisfaction with problem handling. The electric survey includes the question: "The telephone rep told me what Con Edison would do next" whereas the Gas survey asks whether: "The telephone rep explained what was necessary to resolve problem."

overall satisfaction question is consistently below the CCSI index and also below the PSC target.

Exhibit IX-37
CECONY Electric and Gas Emergency Satisfaction Survey

	4Q 2012	2Q 2013	4Q 2013	2Q 2014	4Q 2014	2Q 2015	PSC Target	KPI Target
Electric								
Emergency CCSI	86.1	87.3	88.3	84.3 [Note 1]	87.7		79.0	85.0
Customers stating they are satisfied with the way their problem was handled		76.2	78.7	64.2	81.0			
Gas								
Emergency CCSI	91.8	94.3	94.0	91.1	90.3	91.8	88.1	88.1
Customers stating they are satisfied with the way their problem was handled		84.5	88.0	85.1	80.9	78.0		

Note 1: In 2Q 2014, the Electric CCSI of 84.3 was below the company's KPI of 85.0. CECONY recognized this and attributed the lower number to declining resolution scores. The CCSI recovered by the 4th quarter with an improved score of 87.7.

Source: DR 203-C, Attachments 6, 12, 18, and 24; DR19-C, Attachments 21, 22, 23, and 24; DR556-C, Attachment 1; DR206-C, Attachment 18.

- Deviations between composite scores and overall satisfaction for non-emergency contacts to the call center or Customer Assistance Centers are not as significant. As shown in **Exhibit IX-38**, overall satisfaction is more closely aligned with the composite score, referred to as a "PScore." The PScore is calculated using the average ratings of customers in a selection of approximately half of the 20 questions in the Caller survey. The Visitor PScore calculation includes the average customer ratings for all 10 of the Visitor survey items.²⁰⁹ Although the survey report does not provide individual survey results to confirm the PScore, a calculation based on the percentage of favorable ratings in the 4th Quarter 2014 surveys indicates the PScore is more closely representative of Caller and Visitor satisfaction levels for the given survey instrument.

Exhibit IX-38
Customer Satisfaction - CAC Callers and Visitors (Non-Emergency)

	4Q 2012	2Q 2013	4Q 2013	2Q 2014	4Q 2014	PSC Target
Callers						
PScore	87.3	90.1	89.6	89.7	91.6	82.0
Callers stating they are satisfied [Note 1]		91.8	89.0	92.8	93.8	
Visitors						
PScore	88.9	89.6	89.5	90.5	90.9	84.0
Visitors stating they are satisfied [Note 1]		86.3	86.5	87.8	86.5	

Note 1: Customers response to a singular overall satisfaction question.

²⁰⁹ DR 203

Source: DR203-C, Attachments 4, 5, 10, 11, 16, 17, 22, and 23.

- CECONY also performs semi-annual post-transactional surveys of Steam Emergency and Steam Non-Emergency customers. The results of these surveys for 2013 and 2014 are presented in **Exhibit IX-39**. The surveys measure customer satisfaction with contact-related and representative-related issues. The Satisfaction Index is calculated using a “core selection” of the survey items. There are no PSC-mandated customer satisfaction targets for the steam surveys.²¹⁰

Exhibit IX-39
Steam Customer Satisfaction

	4Q 2012	2Q 2013	4Q 2013	2Q 2014	4Q 2014
Steam Non-Emergency					
Satisfaction Index	92.6	94.8	93.3	96.5	96.4
Customers stating they are satisfied [Note 1]	94.1	96.6	98.0	100.0	98.2
Survey Sample	51	58	51	69	57
Survey Month	Sep-Oct	Feb-Mar	Sep-Oct	Mar-Apr	Sep-Oct
Steam Emergency					
Satisfaction Index	95.3	94.3	96.1	92.9	95.3
Customers stating they are satisfied*	92.5	87.0	93.0	91.0	96.3
Survey Sample	120	107	128	100	109
Survey Month	Sep-Oct	Apr	Oct	Apr	Oct-Nov

Note 1: Customers response to a singular overall satisfaction question

Source: DR 203-C, Attachments 25, 26, 27, and 28.

- For all surveys, the survey vendor flags any individual questions for which the response was below the PSC target. This information can then be used by CECONY to improve performance.²¹¹

23. In addition to the more traditional survey methods, CECONY has undertaken a number of initiatives to better understand and address the needs of its customers.

- In early 2011, CECONY developed a cross-functional Enhancing Customer Relationships (ECR) team to create a proactive customer-centric culture throughout the organization.²¹² Initial areas of focus included employee training, customer satisfaction, communications, recruitment, recognition and performance. The ECR identified a number of customer pain points including: service dates for customer jobs; restoration processes (physical and property damage claims/recovery); and the transparency and timeliness of utility communications, including self-service, website and other customer communications.²¹³ Various subgroups were formed to address the initiatives.

²¹⁰ DR 758-C

²¹¹ DR 203-C

²¹² IR 6 and IR 240, DR 755-C and Attachments

²¹³ IR 32, DR 245-C and DR 755-C

- A new training program consisting of an 8-hour classroom training course and 4 eLearning modules were launched in 2013 and 2014.²¹⁴ In 2014, over 2,400 CECONY employees completed the eight-hour training.²¹⁵ Throughout 2015, CECONY continued to educate employees about enhancing the customer experience. All new Customer Operations employees will spend two days during training on ECR topics and training will continue for existing employees. Ultimately, the goal is for all employees to complete the eight-hour course.²¹⁶ Nearly all CECONY employees have completed the online eLearning module focused on enhancing customer relationships.²¹⁷
- In accordance with the New York State Public Service Commission's February 21, 2014 Order in Case No. 13-E-0030 et. al., CECONY conducted a Customer Preference Survey, which was designed in consultation with DPS Staff and interested parties.²¹⁸ The objective of the survey was to assess customer use of technology, communication preferences and information needs, energy patterns and the customer's overall opinion of CECONY. The survey weighted "concern", low-income and Spanish-speaking customers more heavily and was completed in December 2014. In response to the survey, CECONY plans to increase its focus on digital technologies, provide customers with additional information related to energy usage and continue to understand evolving customer preferences through surveys and social media.²¹⁹
- In December 2014, CECONY developed an online advisory committee to solicit customer input on a variety of topics. The online advisory community consists of about 10,000 customers intended to be representative of the customer base. Depending on the topic to be addressed, CECONY will email a subset of the community (e.g., low-income customers, residential-only customers) and request input on a specific area of interest.²²⁰
 - Customers participate through an online survey, an online focus group, or a qualitative discussion.²²¹ Topics for 2015 included such varied items as:²²²
 - Peak summer day AC usage and behavior,
 - AMI/Smart Meter interest and preference, mandatory hourly pricing, energy efficiency
 - Gas safety, gas leak map
 - Net metering
 - Bill advertisement perceptions

²¹⁴ DR 755-C

²¹⁵ DR 247-C Attachment 1

²¹⁶ DR 247-C Attachment 1

²¹⁷ DR 247-C Attachment 1

²¹⁸ DR 246-C Attachment 1

²¹⁹ DR 246-C Attachment

²²⁰ IR 73

²²¹ DR 359-C Attachment 1

²²² DR 359-C Attachment 1

- Live chat interest and preferences
 - Bill preferences
 - Poweryourway.com site evaluation
 - CoolNYC and Power Pledge interest
 - Text outage notification drivers.
- The online advisory community is administered by an outside vendor that compiles the results in a formalized report with findings and recommendations.²²³ As an example, 2,861 residential and commercial CECONY customers participated in the e-Bill short survey (follow-up to an original survey after e-Bill changes were implemented). CECONY develops recommended action plans based on the results.²²⁴
 - CECONY's outage maps and e-bills were changed as a result of community input.²²⁵
- As a result of the higher than typical PSC QRS complaint levels in 2014, CECONY's Customer Operations QA Group performed a root cause analysis to better understand the reasons for the complaints, determine whether the customer had previously contacted CECONY to attempt to resolve the complaint, and assess whether the complaint might have been preventable. As a result of the review, Q&A sessions were conducted with the call center and electric and gas operations. 2015 QRS complaints are back to a more typical level.²²⁶
 - CECONY purchases the full JDP Survey and evaluates the results to identify areas for improvement.
 - CECONY ranked in the top quartile of JD Power Business Customer Satisfaction – East Large Electric Utilities from 2013 – 2015 and about the midpoint of all utilities.²²⁷ Residential performance has not been as good, with CECONY ranking at about the midpoint of the East Large Electric Segment in 2013 and 2014, and the bottom quartile of electric utilities overall.²²⁸
 - CECONY showed a marked improvement in residential customer satisfaction in 2015, moving into the top quartile in 2015.²²⁹ JD Power results are affected by a number of factors including storms or the absence thereof.
 - **Exhibit X-40** provides a comparison of CECONY's JD Power scores from 2011-2015.

²²³ DR 359-C Attachment 4

²²⁴ DR 359-C Attachment 2

²²⁵ IR 73, DR 359-C Attachments 1-4

²²⁶ DR 369, IR 234

²²⁷ DR 560-C Attachments 1-3

²²⁸ DR 560-C Attachments 4 and 5

²²⁹ DR 560-C Attachment 6

Exhibit IX-40
JD Power Overall Customer Satisfaction Results - CECONY

Year		Overall Residential Customer Satisfaction		Overall Commercial Customer Satisfaction	
		CSI	Rank	CSI	Rank
2011		610		650, 658 [Note 1]	
2012		601		654, 623 [Note 1]	
2013	Segment Rank	613	10 of 17	639	2 of 12
	Industry Rank		105 of 126		53 of 95
2014	Segment Rank	625	11 of 17	655	3 of 12
	Industry Rank		114 of 138		54 of 93
2015	Segment Rank	673	4 of 17	671	3 of 12
	Industry Rank		62 of 140		54 of 87

Note 1: 2011 and 2012 CSI results include a CSI for April-June and a second CSI for September-December.

Source: DR 560-C, Attachments 1-6.

24. O&R also solicits feedback from its customers to understand and improve the customer experience.

- As discussed in Conclusion IX-22, O&R contracts with the survey vendor, XZAM, to conduct monthly customer contact satisfaction surveys.²³⁰ The results of the survey are not intended to be statistically valid, but rather a sampling of the monthly transactions.²³¹ Customer Service reviews the customer comments and survey calls are analyzed to identify coaching opportunities. Customers expressing high bill or pricing concerns are mailed an Energy Saver pamphlet.²³²
- In addition to the contact center survey, O&R also conducts post-transactions surveys regarding the customer's experience with field operations, including tree trimming, gas leak response, electric outages, gas service and meter operations.²³³
- JD Power conducts annual residential and business utility customer satisfaction surveys. Contrary to the positive transactional survey results, O&R has consistently ranked in the bottom quartile (2011-2015) in electric satisfaction as ranked by JD Power.²³⁴ In 2014, O&R contracted with JD Power to receive the full survey, providing them with the benefits of knowing the ranking by category.²³⁵ In 2015,

²³⁰ DR 203-O

²³¹ DR 563-O

²³² DR 563-O

²³³ DR 203-O Supplement 1 and 3/30/16 email from O&R

²³⁴ www.jdpower.com

²³⁵ DR 203-O Supplement Attachment 1, 203-O Supplement 2 Attachment 1, 203-O Supplement 2 Attachment

their residential satisfaction score moved them from last to 13 of 16 in the East Midsize Segment.²³⁶

- O&R participated in three of the CECONY online surveys and one of the online focus groups. The panel for these surveys included O&R customers.²³⁷
- CECONY's ECR training was modified and implemented at O&R, which is requiring all employees to take the training.²³⁸ The training focuses on a variety of topics including: the importance of recognizing and adapting to different communication styles; managing customer expectations in a changing environment; and, responding to customers who feel bothered, irritated or abused.²³⁹
- O&R is implementing the I3 phone system recently adopted by CECONY. This new system will allow O&R to conduct automated post-call surveys to obtain feedback from customers regarding their experience during the call.

25. The companies appropriately measure customer operations service levels and the quality of service provided to its customers. Service levels are adequate and consistent with regulatory requirements.

- Both utilities participate in a variety of utility groups or benchmarking studies to assess their performance relative to other utilities and determine relative service levels.
 - CECONY has participated in benchmarking studies in the areas of credit and collections, utility websites, IVR technology and use, call center operations and meter reading performance. CECONY also participates in a number of utility panels and user groups intended to share best practices.²⁴⁰
 - O&R similarly participates in a number of working groups and conferences addressing call center operations, credit and collections, metering and meter reading.²⁴¹

²³⁶ 203-O Supplement 2 Attachment 2

²³⁷ DR 359-C Attachment 1 (3 waves of the Peak Hot Summer Day AC Usage and Behaviors, and an online focus group regarding digital wireframe testing.

²³⁸ Review of training materials at O&R

²³⁹ Review of training at O&R

²⁴⁰ DR 10-C

²⁴¹ DR 10-O

- In addition to the PSC complaints and overall customer satisfaction levels discussed previously, both CECONY and O&R monitor and report to the PSC on a variety of customer operations performance metrics. Reported service levels are consistent with NorthStar's experience with other utilities. CECONY and O&R also provide the PSC with monthly collections activity reports.

Exhibit IX-41
PSC Reported Performance Levels – CECONY

Measure	2012 Performance	2013 Performance	2014 Performance	Jan-Sep 2015 Performance
Appointments made/kept	99.6%	99.8%	99.9%	99.8%
Bills issued/adjusted	0.3%	0.4%	0.3%	0.4%
Calls received/answered [Note 1]	9.39 million 94.8%	8.91 million 95.5%	8.95 million 96.5%	6.23 million 93.7%
Calls requesting a representative	4.52 million	4.41 million	4.32 million	3.11 million
Calls answered in 30 seconds [Note 1]	58.3%	60.7%	67.0%	65.0%
Non-emergency service/meter work orders received, average days to complete	1 day	1 day	1 day	1 day
Tree trimming work orders received, average days to complete	1.2 – 2.7	1.0 – 2.2	0.6 – 1.5	0.4 – 1.0
Percent estimated reads	11.7%	11.1%	6.1%	10.9%
Same day reconnects			99.94%	99.98% [Note 2]

CECONY also reports on its consumer education and outreach activities, the numbers of low income customers and their arrearages.

Note 1: Straight average of 12 months' performance.

Note 2: Data from January-December 2015. The reporting requirement for this began on 2/14/2014 with a new order for Case 13-E-0030

Source: DR 19-C Attachments 1 and 2, DR 548-C Attachments 1-3, DR 549-C, DR 19-C Attachments 25-28.

Exhibit IX-42
PSC Reported Performance Levels – O&R

Measure	2012 Performance	2013 Performance	2014 Performance	Jan-Sep 2015 Performance
Appointments made/kept	100%	94.3%	96.7%	96.7%
Bills issued/adjusted	0.9%	0.3%	0.2%	0.2%
Calls received/answered [Note 1]	780,339 97.4%	703,709 96.5%	740,542 96.4%	528,989 97.1%
Calls requesting a representative	456,721	471,294	471,947	323,880
Calls answered in 30 seconds [Note 1]	64.3%	64.6%	59.1%	59.9%
Non-emergency service/meter work orders received, average days to complete	20 days	13 days	14 days	9 days
Tree trimming work orders received, average days to complete	25 days	38 days	43 days	138 days
Percent estimated reads	7.5%	4.1%	5.4%	6.7%

Note 1: Straight average of 12 months' performance.

Source: DR 592-O Attachments 2-5

- **Exhibit IX-43** provides a comparison of the corporate-level customer operations KPIs for CECONY and O&R for 2014. Both utilities met or exceeded the KPIs during the five-year period 2010-2014.

**Exhibit IX-43
Corporate KPIs**

KPI	Year	CECONY		O&R	
		Target/ Regulatory Req.	Actual	Target/ Regulatory Req.	Actual
PSC Complaints (per 100,000) Penalty Measure	2010	≤2.5	1.6	2.5 electric 1.8 gas [Note 1]	0.5
	2011	≤2.5	1.6	2.5 electric 1.8 gas [Note 1]	0.8
	2012	≤2.5	1.2	≤1.8	0.6
	2013	≤2.5	1.8	≤1.8	
	2014	≤2.3	1.8		
Calls Answered by a CSR within 30 seconds (Penalty Measure)	2010	≥56%	58.2%	≥74%	75.7%
	2011	≥56%	58.6%	≥74%	75.5%
	2012	≥56%	59.4%	≥74%	79.8%
	2013	≥56%	61.1%	≥74%	76.1%
	2014	≥63%	67.5%	≥74%	74.4%
Customer Satisfaction Surveys (Penalty Measure)	2010	≥83%	90.9%	6.99 res 6.73 bus [Note 2]	7.11
	2011	≥85%	89.8%	6.99 res 6.73 bus [Note 2]	7.17
	2012	≥85%	89.3%	≥89%	94.9%
	2013	≥85%	90.4%	≥89%	96.4%
	2014	≥85%	89.5%	≥89%	94.9%
Meters Read on Cycle (no PSC Penalty after 2010)	2010	N/A	N/A	[Note 3]	
	2011	≥89.1%	89.1%		
	2012	≥89.2%	89.2%		
	2013	≥89.4%	89.6%		
	2014	N/A	N/A		
Written Correspondence Responded to within 5 business days (no PSC Penalty) [Note 4]	2010			92%	96.8%
	2011			92%	97.4%
Internet Inquiries Responded to within 24 hours (no PSC Penalty) [Note 4]	2010			92%	97.4%
	2011			92%	94.3%
Percent of Adjusted Bills	2012			<2.42%	0.94%
	2013			<2.42%	0.28%
	2014			<2.42%	0.16%
Process Customer Service Applications Within 6 business days (no PSC Penalty)	2013			≥95%	98.6%
	2014			≥95%	97.2%
Complete Large Commercial and Industrial Customer Visits (no PSC Penalty)	2013			≥100	103
	2014			≥100	102
Appointments Kept	2014			≥95%	96.5%

Note 1: Internal standard was 1.8 for both.

Note 2: Internal standard was 7.00 combined in 2010 and 7.11 in 2011.

Note 3: Although not a corporate KPI for compensation purposes, O&R does track this measure. For 2013-2015 the target was $\geq 92\%$ (DR 206-O).

Note 4: Although this was dropped as a corporate level KPI for compensation purposes, O&R continues to track it. The target increased to 93% within 5 days for written correspondence and remained 93% within 24 hours for internet inquiries (DR 206-O)

Source: DR 9.

- In addition to the corporate-level KPIs and information reported to the PSC, CECONY also tracks other customer operations KPIs at the SVP, VP and GM level. KPIs have varied over time depending on the focus of the utility.
- CECONY's Customer Operations KPIs are tracked on a monthly and annual basis and are used in determining the incentive payouts for the SVP/VP and GMs.²⁴² CECONY uses a tiered approach. The SVP is evaluated based on the KPIs shown in **Exhibit IX-44**.

Exhibit IX-44
SVP Level Customer Operations KPIs CECONY

KPI	Date(s) in Effect
Net Loss (per \$100 Revenue)	2011-2015
Percent Calls Answered	2011-2014
Routine Investigations Completed within 30 Days	2011-2014
First Call Resolution	2015
Overall Customer Experience Rating	2015
Self-Service Transaction Containment – MyAccount	2015
Self-Service Transaction Containment – IVR	2015
Cost Management/Productivity Index	
CFR Productivity	2011-2015
CSR Productivity	2011-2015
Cycle Meter Reading Units	2011-2015
Cycle Meter Reading (Cost/Unit)	2011-2015
AMR Saturation (Units)	2011-2015
AMR Saturation (Cost per Unit)	2011-2015

Source DR 206-C and 529-C.

- CECONY's GMs and VPs are evaluated based on certain of the above KPIs as well as more detailed KPIs specific to their job function.²⁴³
 - The GM Customer Assistance is evaluated based on the number of calls answered in 30 seconds, net losses, the customer satisfaction surveys, PSC complaints, first call resolution, the cost management/productivity index, the percent of SME reviews coordinated, percent unbilled revenues, and percent aged receivables by year-end.
 - The GM Field Operations is evaluated based on meter reading on cycle, net losses, PSC complaints and the cost management/productivity index, and nine other job-specific measures including theft of service targets, reduction in

²⁴² DR 206

²⁴³ DR 206

high risk accounts receivable, demand meter reading and Customer Field Representative availability.

- Customer Outreach is evaluated based on PSC complaints and the cost management/productivity index and 11 other job-specific KPIs such as the results of the outreach and education survey, numbers of events, number of blast email campaigns and outage notifications.
 - Strategic Applications is evaluated based on net losses, PSC complaint rates, the cost management/productivity index and seven other KPIs including percent aged receivables and processing of Replevin cases (meter seizures).
 - Specialized Activities KPIs include net losses, PSC complaint rates, the cost management/productivity index and nine other metrics including unbilled revenues, percent of executive cases completed within 30 days and pole attachment application processing.
- The CECONY operating groups also perform detailed tracking of the productivity, performance and effectiveness of the various functions.²⁴⁴
- O&R also tracks a number of additional Customer Operations KPIs as shown in **Exhibit IX-45**. Safety KPIs are not included below.

Exhibit IX-45
Additional Customer Operations KPIs - O&R

KPI	2013-2015 Targets
Reduce Consecutive Estimates > 6 months	≤ 0.25% for 2013 ≤ 0.20% thereafter
Collection Backlog (average number of days pending field collections)	≤ 20
Completed Field Collection Stops (average number per month)	≥ 4,500
State Regulatory Test Programs (program completion)	≥ December 1
Net Losses (per \$100 Revenue)	\$0.39
Greater than 90 day A/R Balance	< \$5.4M
Sundry Uncollectible Expense	≤ \$400k for 2013 ≤ \$450k thereafter
Sundry over 90 day A/R Balance	≤ \$1.5M
Electric Service Goal (within 7 days)	90%
Process Electronic Applications	40% for 2013 30% thereafter
Gas Marketing Revenue	> \$1M 2013 > \$1.2M 2014 > \$1.76M 2015
Gas Service and Meter Installs	95% of gas installs in 7 days and meter installs in 2 days – 2013 90% completed in 10 days with 6 days' notice - thereafter
Interruptible Gas Transportation (hours to identify failures/hours to correspond with customers)	36/72
Retail Choice Outreach and Education (events per year)	20 for 2013 25 thereafter
Energy Efficiency – Small Business Direct Program	10,931 MWh

²⁴⁴ DR 249 (Field Operations)

KPI	2013-2015 Targets
Energy Efficiency – Efficient Products Program	2,243 MWh
Energy Efficiency - C&I Existing Building Rebate Program	6,128 MWh
Energy Efficiency – Residential Gas HVAC Rebate Program	14,691 Dth
Process Right of Way and Cost Letter (within 7 days)	2013 KPI only – 95%
Respond to Customer Correspondence (within 7 days)	2013 KPI only – 95%
Customer in Service Dates (within 60 days)	2013 KPI only – 95%

Source: DR 206-O, Attachments 1-3.

D. RECOMMENDATIONS

- O&R needs to complete its review of current processes to determine why the error occurred in the service turn on for a commercial customer which took almost one month to complete and implement necessary changes. The required documentation was provided on 5/27/15; however, the service was not physically turned on until 6/25/15.
- CECONY has proposed the following solution to address the issues with the denial of service notification for customers that do not currently have service (i.e., service “cold”). NorthStar concurs with the proposed solution, but notes that CECONY must also address the denial of service and document retention requirements for residential and non-residential denials of service required by Parts 11 and 13 of 16 NYCRR for applicants that currently have service (i.e., service “hot”).
 - In order to establish processes and controls so that Turn-On denial letters are sent in all cases where service is not already on at the premise, CECONY proposes that a training document be sent to all Customer Service Representatives reminding them of the Turn-On denial process.
 - In addition, as an interim additional control measure, reports of all of the Turn-On Deny notations will be generated and produced on a daily basis for review. Customer Assistance staff will review the list to validate that the Turn-On Deny letter was sent to the applicant, and take action as necessary.
 - In the longer term, an automated solution will be evaluated to improve controls. A cross-functional team will be assembled to develop this automated solution and to evaluate feasibility, costs and prioritize implementation. It is expected that a recommendation for an automated solution will be available by third quarter 2016.
 - Currently, in situations where service is “hot” (i.e., already on at the premise), a control exists if the customer continues to use service but does not contact the company. Accounts registering usage on a meter after a cycle reading that do not have a customer of record generate inactive advance notices which are sent to the location. There is currently a group in Field Operations dedicated to reviewing

accounts with a Turn-Off field order, which is generated after two cycle readings register usage on a meter.²⁴⁵

3. Modify O&R's Joint Procedures – 0011 “Customer Deposits for Gas and Electric Service” as follows:
 - Eliminate the section that allows O&R to charge a deposit for a new residential customer that is considered a credit risk.
 - Modify the language regarding deposit payment arrangements to allow the customer to pay in 12 monthly installments.
 - Eliminate the language that indicates that residential customers that cannot pay the deposit in full will either be turned off or not turned on.
 - Clarify that the payment of the security deposit in full as a condition of service for non-residential customers is applicable to new customers only.
 - Clarify the language regarding the length of time non-residential deposits such that it is clear that deposits will only be held longer than 3 years in the event of delinquency.
4. Make the following modifications to O&R's collections notices and website:
 - Once current stock has been depleted or other changes warrant, modify O&R's “Your Rights and Responsibilities as a Commercial Customer of Orange & Rockland” to specifically inform non-residential customers that they may request a review to ensure a required security deposit is not excessive.
 - Modify O&R's residential customer broken agreement letter to include the address and telephone number of the appropriate social services office or the local social service information number, as required by Part 11.10 of HEFPA.
 - Correct the portion of O&R's web page describing the requirements for enrollment into the residential leveled payment plan to clarify that customers may enroll at any time.
5. Modify CECONY's CSR training (DR 201-C, Attachment 12, p. 9-14) to be consistent with the security deposit installment plan requirements of HEFPA. According to a 2/18/16 email from CECONY this issue has already been corrected in response to NorthStar's inquiry of 2/17/16. NorthStar has not verified the correction.
6. Evaluate and document the following modifications to CECONY's bills and collections notices:
 - Modify the bill notice section to better highlight critical collections-related bill messages.

²⁴⁵ 2/16/16 email from CECONY

- Correct CECONY's demand rate bill formats to correctly display the rates.
 - Modify CECONY's SAO postcard to contain language regarding financial need, the \$10 minimum offer or the customer's ability to modify the terms based on changes in their financial circumstances.
7. Determine the cost of limiting CIMS access (O&R) such that CSRs cannot remove the LSE code on a customer account (should be performed by a supervisor or other applicable group) or manually issue a lock for non-payment order on an EBD or LSE customer account. Alternatively, develop reporting to determine if such an event has occurred.
 8. As part of the current rate case, CECONY and the DPS should review CECONY's emergency contact customer satisfaction scoring methodologies and associated targets to ensure the indices provide the best information possible.

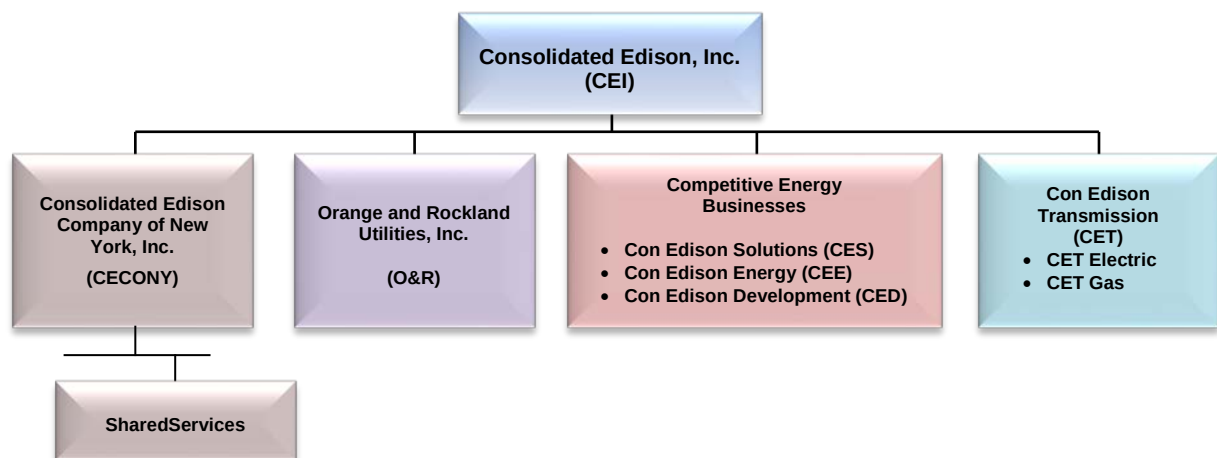
X. SHARED SERVICES AND AFFILIATE TRANSACTIONS

This chapter describes the procedures used to allocate shared or common costs to and from CECONY, O&R and their affiliates. It also examines whether the Utilities follow procedures intended to assure that inappropriate information is not shared among the companies.

A. BACKGROUND

Consolidated Edison, Inc. (CEI) is the holding company that owns CECONY, O&R and three competitive energy businesses (CEBs) with \$12.6 billion in annual operating revenues and \$45.6 billion in total assets.¹ CECONY provides corporate and utility shared services to the entire CEI family. O&R also provides limited support services to CECONY.

Exhibit X-1
Consolidated Edison, Inc. Simplified Corporate Structure



Source: CEI Form 10-K for the Fiscal Year Ended December 31, 2015, filed 2/18/2016.

CEI's Form 10-K filed with the Securities and Exchange Commission on February 18, 2016, provides the following background information.² CEI pursues competitive energy opportunities through three wholly-owned subsidiaries: Con Edison Solutions, Con Edison Energy and Con Edison Development. These businesses sell electricity purchased in wholesale markets to retail customers and enter into related hedging transactions, provide energy-related products and services to wholesale and retail customers, and participate in energy infrastructure projects.³

¹ CEI Form 10-K for the Fiscal Year Ended December 31, 2015, filed 2/18/2016, page 7

² CEI Form 10-K for the Fiscal Year Ended December 31, 2015, filed 2/18/2016.

³ CEI Form 10-K for the Fiscal Year Ended December 31, 2015, filed 2/18/2016, page 14 – Competitive Energy Businesses.



On January 25, 2016, CEI announced that it created a new subsidiary, Con Edison Transmission, Inc. (CET), to invest in electric and gas transmission projects⁴ CET will operate Con Edison Transmission, LLC (CET Electric) that was formed in 2014 to invest in electric transmission and will manage investments with New York Transco, LLC. CET will also operate Con Edison Midstream, LLC (CET Gas) that was formed in 2016 to invest in gas pipeline and storage businesses.⁵ Throughout the course of this audit, CET conducted no business activity and had only one designated, shared employee. The shared services organization reports directly to the CEO and is not a separate subsidiary company. The shared services organization is not incorporated and does not maintain a separate set of books and records. Its personnel and costs are embedded in the CECONY's organization. As a result, it was critical that NorthStar develop a comprehensive understanding of the controls and accounting methods employed by each utility to account for shared services and affiliate transactions. NorthStar examined a sample of individual transactions to determine whether direct charges and cost allocations were appropriately billed among the holding company (CEI), CECONY, CEBs, O&R and as well as O&R's affiliates, Pike and RECO.

This audit reviewed the following categories of potential affiliate interactions and costs:

- Corporate governance
- Employee training
- Affiliate transaction accounting
- Transfer pricing
- Shared corporate support services
- Employee transfers
- Temporary assignments
- Facilities planning/management
- Marketing and advertising
- Utility/affiliate joint purchasing
- Information technology
- Power and gas transactions
- Power and gas supply management
- Risk management

As shown in **Exhibit X-2**, shared service costs are split into corporate and utility shared services. Corporate shared services are costs incurred by CEI which are then allocated across the business enterprise. Allocation factors for Corporate shared services are shown in **Exhibit X-6**. Utility shared services include costs incurred on behalf of the two regulated utilities. Utility shared services costs are allocated 92.7 percent to CECONY and 7.3 percent to O&R.⁶

⁴ <http://www.itbusinessnet.com/article/Con-Edison-Creates-Transmission-Subsidiary-4261114>

⁵ CEI Form 10-K for the Fiscal Year Ended December 31, 2015, filed 2/18/2016, page 28 and the Company News Page date 01/25/2016 (see Footnote 3).

⁶ DR 13-B Attachment 1



Exhibit X-2
Shared Services Costs

	2014 M\$	2015* M\$
Corporate Shared Services		
CECONY	39.0	21.3
O&R	3.0	1.6
CEBS	1.1	0.5
Total	43.1	23.4
Utility Shared Services		
CECONY	266.7	139.7
O&R	21.0	11.0
Total	287.7	150.7

* - January through June 2015

Source: DRs 13-B Attachments 1 and 2, 254-B Attachments 1 & 2

CECONY and O&R use Oracle E-Business Suite (EBS) as their primary accounting system. Oracle EBS is a web-based Enterprise Resource Management system with a suite of integrated Finance and Supply Chain modules. Oracle EBS performs general ledger, project costing, accounts payable and accounts receivable functions and interfaces with payroll, work management, treasury and asset management systems. In addition to Oracle EBS, the utilities use Oracle Hyperion Financial Management for reporting and budget preparation, Oracle Business Intelligence for analytics and PowerPlant for asset management.⁷

Most of the shared services for CEI enterprises are provided by CECONY. These include such items as Information Resources, Supply Chain, Emergency Management and Human Resources and Learning & Inclusion. O&R provides limited shared services to CECONY and to its subsidiaries Pike and RECO. **Exhibit X-3** provides a table of the services provided by CECONY to its affiliates and **Exhibit X-4** provides a table of the services provided by O&R to CECONY, Pike and RECO.

⁷ DR 40-B



Exhibit X-3
Services Provided by CECONY to each Affiliate

Services		Affiliates		
		CEI	O&R	CEBs
Finance				
	Senior VP Finance	X	X	X
	Corporate Accounting	X	X	X
	Business Finance	X	X	X
	Tax	X	X	X
	Treasury	X	X	X
	Rate Engineering		X	
	Investor Relations	X	X	X
	Strategic Planning	X	X	X
	Auditing	X	X	X
Shared Services (SS)				
	President and Senior VP SS		X	
	Supply Chain		X	
	Facilities and Field Services		X	
	Emergency Management		X	
	Security		X	
	Information Resources		X	X
	Energy Management		X	
	Human Resources and Learning & Inclusion	X	X	X
	Research and Development		X	
	Energy Policy and Regulatory Affairs		X	
	Business Shared Services	X	X	X
Law				
	Legal including Ethics and Compliance	X	X	X
	Regulatory Services		X	
	Office of the Secretary	X	X	X
Other				
	Public Affairs	X	X	X
	Office of the CEO	X	X	X
	Bill Processing		X	
	FERC Regulatory Expenses		X	
	Government Relations	X	X	X
	Labor Relations	X	X	X
	Energy Policy (Transco)	X		

Source: DRs 5-B Attachment 9, 7-B



Exhibit X-4
Services Provided by O&R

Services	Affiliates		
	CECONY	Pike	RECO
Bill Payment Processing	X	X	X
Rubber Glove Testing	X	X	X
Information Resources	X	X	X
Supply Chain	X	X	X
All other services related to the provision of natural gas		X	
All other services related to the provision of electricity		X	X

Source: DRs 5-B Attachments 5-8, 7-B

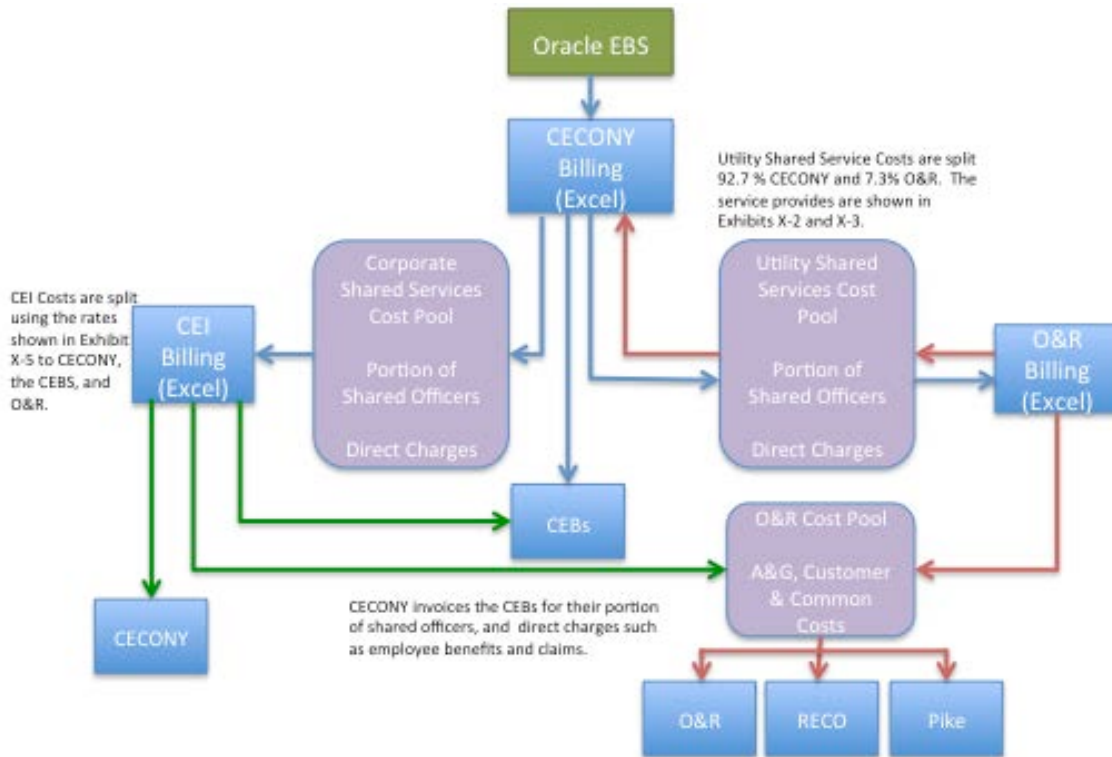
Affiliate billing is performed manually by CECONY for CECONY, CEI and O&R through a series of Excel spreadsheets processed by CECONY. Each company is invoiced for the services received from CEI, CECONY and O&R. Data are downloaded from Oracle EBS by project/account number and inserted into the spreadsheets. **Exhibit X-5** describes the process flow for allocating costs and direct charges to the business units.

CECONY prepares a monthly invoice to CEI for all costs paid and services performed on behalf of CEI. Approximately two-thirds of the monthly invoice to CEI is for insurance premiums (e.g., liability) followed by CEI's portion of the salaries of shared officers, directors, and managers. Costs charged to CEI are about \$50 million annually.⁸ CECONY then invoices each company within the enterprise on behalf of CEI for the allocated share of corporate costs using a three-factor allocation formula consisting of gross margin, payroll, and assets. The corporate allocation factors for 2014 and 2015 are shown in **Exhibit X-6**

⁸ DR 254-B



Exhibit X-5 Affiliate Costs Process Flow



Source: NorthStar Analysis

Exhibit X-6 2015 Corporate Allocation Rates – CEI to Subsidiaries

Company	2014 Rate (Percent)	2015 Rate (Percent)
CECONY	90.51	91.26
O&R	6.90	7.09
CEB Shared Services	0.12	0.11
CEE	0.26	0.38
CES	1.28	0.42
CED	0.94	0.75
Total	100.00	100.00

Source: DR 13-B

CECONY also prepares monthly invoices to each of the CEBs for services provided by CECONY. The charges on these invoices include each CEB's portion of shared officers', directors', and managers' salaries including office space and benefits, and direct charges for services provided by the shared services organization, and direct charges for services provided by shared utility service CECONY employees.⁹

⁹ DR 254-B



CECONY prepares monthly invoices to O&R for shared services, external direct costs, and direct charges from CECONY for non-shared services. Shared services are billed based on the three-factor allocation formula using gross margin, payroll, and assets. Based on this formula O&R received 7.3 percent of shared service costs and CECONY received the remaining 92.7 percent in 2015. Shared services include the regulated utilities' share of officers' salaries and overheads and shared services staff. Shared service resources occasionally charge time and expenses directly to the CEBs. The employees performing these services and their associated overheads are dedicated to regulated activities. Because the costs associated with these employees were billed as part of the shared services pool between CECONY and O&R, O&R is rebated 7.3 percent of these charges in January each year to prevent O&R from being billed for services already paid for by the CEBs.¹⁰

O&R invoices its affiliates for services provided by O&R as shown in Exhibit X-3. These invoices are prepared by shared services staff who work for CECONY. Shared services such as the rubber glove testing and cash processing are charged to CECONY at the same 92.7 percent rate that CECONY charges itself for shared services with O&R. O&R then, using a cost pool of its own, allocates its portion of CECONY shared services costs, labor relations, financial services, environmental health and safety costs, administrative and general (A&G) and customer costs to Pike and RECO using eighteen different multi-factor formulas based on various factors such as number of customers, revenue, assets and payroll for electric and gas business components.¹¹

B. EVALUATIVE CRITERIA

- Do internal control procedures ensure that direct charges and cost allocations are appropriately billed among the holding company (CEI), CEBs, CECONY and O&R and between O&R and its affiliates, PIKE and RECO?
- Do the companies have effective cost allocation policies, procedures, and related manuals that apply approved costing principles for affiliate transactions?
- Do management control policies and procedures exhibit an appropriate bias toward identification and direct charging of goods and services for affiliate transactions?
- Do cost allocation procedures assure that costs are allocated on a fully distributed basis?
- Are allocation factors based on reasonable causal factors and common industry standards?
- Do written procedures effectively govern the process of direct charging and cost allocations and are they clear and followed?
- Are occupancy costs for shared facilities allocated on appropriate basis?

¹⁰ DR 808-B

¹¹ DR 808-B



- Are payments for intercompany charges and cost allocations made promptly and in accordance with common commercial terms?
- Do shared services inappropriately provide a means for the transfer of confidential information, create an opportunity of preferential treatment of unfair competitive advantage, lead to customer confusion, or create opportunities for cross-subsidization?
- Do CECONY or O&R acquire information on behalf of affiliates or share market analysis, information or reports with affiliates?
- Are there effective “firewalls” in place in information systems to prevent affiliates access to information other than what is required for corporate activities?
- Does the organization of the regulated utilities and the unregulated affiliates reflect appropriate separation of functions, oversight and controls?
- What are the shared organizational roles and responsibilities among the holding company (CEI), CECONY and O&R and between O&R and its affiliates, PIKE and RECO and are they appropriate?
- Do controls exist to prevent cross-subsidization among affiliated entities?

C. FINDINGS AND CONCLUSIONS

1. CECONY and O&R have several cost allocation policies and procedures. They do not have an overall corporate cost allocation manual.

- There are three cost pools developed for allocating common and shared costs as shown in Exhibit X-5. There is no allocation manual that fully articulates the process flow shown X-5.
- The existing allocation procedures are high-level and often vague in identifying specific accounts to be included in each cost pool. The procedures are silos that do not provide an overall guidance as to how affiliate costs pass through the organization.¹²
- NorthStar’s review of intercompany invoices found that all samples adhered to the company accounting procedures.¹³

¹² DRs 5-B, 12-B, and 34-B

¹³ DRs 254-B, 744-B and 808-B



2. CECONY has internal control procedures to ensure that direct charges and cost allocations are appropriately charged or allocated to the correct corporate enterprises. However, the calculations are performed manually using large and complex Excel spreadsheets, increasing the potential for errors.

- The Oracle EBS system properly collects time and costs by cost element (e.g. hours worked, charge number, invoices dollars) and account number (also known as project number).
- Accounting personnel are required to download Oracle affiliate cost charges by account into billing spreadsheets. The spreadsheets are created for each invoice for each month. Many spreadsheets contain as many as 100 tabs per spreadsheet. Each tab separates data by account number. Pivot tables are used to filter and aggregate costs. The data from the pivot table is then translated into a line item invoice.
- The invoices are a manual process that is labor intensive and repetitive. The potential for missing accounts, not downloading an account or formulaic errors in a cell present some risk. NorthStar found a number of errors on invoices where titles were not updated to reflect appropriate dates.¹⁴ While the errors have no monetary significance, they demonstrate how easily errors can be made in the process.
- NorthStar conducted tests of selected affiliate bills and found several minor errors:
 - The methodology for crediting O&R for utility shared service employees charging the CEBs is correctly computed. However, it is not clear why crediting occurs only annually and after the year is complete.¹⁵
 - NorthStar found small errors in the crediting of O&R for utility shared services employees charging the CEBs. February 2014 invoices show CED with a charge of \$30,911.29 for Directors, Corporate and Non-Corporate Services . The refund spreadsheet records the charge as \$30,911.27. These types of errors, while *de minimis*, demonstrate the weaknesses of manual billing.¹⁶
 - Allocation formulas were correctly applied.
 - Allocation formulas were calculated correctly based on the stated methodology.
 - Shared officers, directors, and managers were billed across the enterprise according to semi-annual time estimates.¹⁷
 - Direct charges were appropriately loaded and billed.
 - External invoices for materials and services are allocated appropriately based on causal factors.
 - **Exhibit X-7** describes the tests conducted and the results.

¹⁴ DR 254-B

¹⁵ DR 808-B Attachment 2

¹⁶ DR 254-B Attachment 3 and DR 808-B Attachment 2

¹⁷ DR 14-B



Exhibit X-7 Affiliate Invoice Testing

Test	Description	Testing	Results
1	Verified that CECONY was invoiced from CEI the allocated amount shown on the invoice from CECONY to CEI. CECONY invoices CEI (as CECONY provides the corporate shared service function) for the entirety of CEI's allocated costs and direct charges. This invoice is then allocated across the corporate family. CEI then invoices the corporate family for their appropriate share. This step verifies that CECONY is invoiced the correct amount.	Reviewed September 2014 and May 2015 invoices from CECONY to CEI. Each invoice displays the breakdown of the bill for each company in the CEI Enterprise. NorthStar obtained the invoices from CEI to CECONY and O&R and found that the amount billed to the utilities matches the breakdown on the CECONY to CEI invoice. In September 2014, CEI was invoiced \$ 3,662,273.50 by CECONY. ¹⁸ CEI then invoiced CECONY \$3,313,807.66 and O&R \$252,666.44. The remaining \$95,799.40 is invoiced appropriately to the CEBs. In May 2015, CEI was invoiced \$ 3,901,980.77 by CECONY. CEI then invoiced CECONY \$ 3,560,830.59 and O&R \$ 276,533.38. The remaining \$64,616.80 is invoiced appropriately to the CEBs.	CEI appropriately bills each affiliate.
2	Verified that amounts charged from CEI to CECONY and O&R correctly use the allocation factors	NorthStar tested that CECONY applied the correct allocation factors to the CEI invoice. CECONY provides a breakdown of its invoice to CEI in order that CEI can invoice each affiliate. The CECONY invoice to CEI used the appropriate allocation factors as specified in Exhibit X-5 which were then used by CEI.	CEI corporate costs are appropriately allocated.
3	Verified that shared service charges from CECONY to O&R are cost-based.	CECONY bills O&R a monthly charge for shared services based on an annual forecast divided by twelve and allocated based on O&R's share. CECONY regularly reviews the actual cost versus forecast and "true-up" twice per year. The approximate annual amount for shared services for both utilities is approximately \$300 million. NorthStar reviewed the 2014 and 2015 forecasts of shared service costs and found they are detailed based on cost center and reviewed at least twice per year. ¹⁹	CECONY costs billed to ORU are forecast cost and are true'd up at least twice per year.
4	Verified that shared service charges from CECONY to O&R are calculated using the appropriate allocation factors.	NorthStar verified that shared services are invoiced at the correct allocation factor. Shared services are split 92.7 and 7.3 between CECONY and O&R respectively for both 2014 and 2015. For the first two quarters of 2014, O&R was billed \$1,729,000 monthly. In 2015, O&R was billed \$1,836,000. Both amounts correlate to 7.3 percent of one-twelfth of the forecast. The invoices have display "errors" as the spreadsheets are often not updated for the month being billed.	Allocations are appropriately applied. There are display errors on the invoices demonstrating the inherent weakness to a spreadsheet-driven billing system requiring significant manual input.

¹⁸ DR 254

¹⁹ DR 903-C Attachment 1



Test	Description	Testing	Results
5	Verified that non-shared service labor charges from CECONY to O&R are charged fully loaded.	There are often charges from CECONY to O&R for labor from organizations within CECONY that are not shared services. NorthStar tested a sample of these transactions: Automotive Engineering Chem Lab Services	Organizations that require monthly clearing of costs such as automotive engineering are incorrectly charged, as they do not include indirect charges. The impact is minimal as these charges are infrequent and small.
6	Verified that CECONY allocated direct costs from external vendors for non-shared services, based on causal factors.	Reviewed invoices and charges: Tested postage costs to O&R for bill processing Tested Chem Lab invoices for services Tested KPMG invoices for shared professional services Tested IR invoices for computer services	Charges are based on causal factors.
7	Verified that shared officer costs are billed to CEBs appropriately.	Reviewed bills to CEBs and found charges for shared officers appropriate. Charges include salary, overheads, and fringe benefits. CECONY polls shared offices bi-annually for distribution of time.	Shared officer costs are appropriately allocated to affiliates.
8	Verified that O&R and CECONY are not subsidizing CEBs for shared service costs.	CECONY utility shared services employees occasionally perform services for the CEBs. The utility shared service cost pool as shown in Exhibit X-4 is charged between CECONY and O&R based on a forecast. As O&R already had been charged for these services, when an employee from this cost pool charges time to a CEB or CEI, O&R should be reimbursed. Verified that O&R receives a 7.3 percent refund, fully loaded and the CEBs are billed.	Small errors in copying numbers as discussed in Finding 4, Bullet 3 but CEBs are billed and O&R is credited appropriately.
9	Verified that O&R allocation factors for common and customer costs to Pike and Rockland Electric are correctly calculated and appropriately applied.	NorthStar reviewed the allocation factors for customer and A&G expenses allocated from O&R to Pike and Rockland Electric. The types of expenses incurred are consistent with those for A&G and customer charges. The general ledger entries verify that the allocation factors were appropriately applied.	Costs within O&R are appropriately allocated to O&R, Pike, and RECO.
10	Verified that shared services charged from O&R to CECONY are based on actual costs.	Reviewed September 2014 invoice from O&R to CECONY for cash processing services and rubber glove testing. The August costs for labor and non-labor are correctly billed to CECONY at 92.7 percent.	O&R appropriately bills CECONY for A&G, common and customer costs.

Source: DRs 254, 744, and 808. The CEI invoices for September 2014 were provided in one-on-one session with CECONY Corporate Accounts Receivable and Billing and the May 2015 invoice was provided in DR 808.

3. NorthStar found the use of direct charges for affiliate transactions to be minimal.

- CECONY procedures state that direct charges should be used whenever possible.
- Direct charges represent 39 percent of the invoice amount between CECONY and O&R. While the percentage appears significant, it includes relatively few categories



of large dollar charges including: customer bill printing and postage, cash receivables processing, and employee benefits.

- O&R direct charges Pike and RECO for wholesale commodity costs, operations and maintenance.²⁰

4. Allocation procedures assure that costs are allocated on a fully distributed basis.

- **Exhibit X-4** describes the process of how all costs are accounted for and allocated. The process includes cost pools that include direct, labor loaders, and allocated costs. Each month, all costs from each of the pools are allocated as shown in **Exhibit X-4**.
- The company has three allocation pools that include common, direct and shared costs and overheads: the corporate shared cost pool for costs shared among all CEI affiliates, the CECONY/O&R pool, the O&R/Pike/RECO.
 - The corporate shared services pool includes corporate costs related to corporate insurance, audit, investor relations etc.
 - The regulated pool includes all shared services and common costs. Costs are split based on a forecast budget over 12 months. CECONY regularly reviews the actual cost versus forecast and performs a “true up” twice per year.

5. Allocation factors used by the utilities are based on common industry practice but rarely based on causal factors.

- Most allocation factors used by the utilities are not based on direct causal factors. Rather, multi-factor formulas are used that include a combination of surrogate causal factors. A three-factor formula using gross margin, payroll, and assets is used to allocate CEI and shared service costs. Three factor formulas are a proxy for causal factors. Costs allocated with the three factor formula represent over 60 percent of all allocated costs. Gross margin is defined as operating revenue less the cost of fuel, purchased power, and natural gas for resale.
- O&R distributes many of its customer costs using number of customers as its causal factor.²¹
- Allocation factors are used for officer salaries. Semi-annual surveys are done to approximate the amount of time each officer spends on each company. From this survey, percentages for allocating cost are determined. These percentages are used for monthly billing of CEI and the CEBs.

²⁰ DR 5-B

²¹ DR 808-B



6. CECONY uses a modified cost allocation factor based on an exception permitted in the accounting standards.

- Accounting Standard 403 specifies the allocation of common costs to be based on an average of revenue, assets, and payroll. The standard also provides for the use of a modified formula provided that such allocation is commensurate with the benefits received. Common costs include corporate shared services among all the affiliates and utility shared services between CECONY and O&R.²²
- CECONY adjusted this allocation factor to use gross margin instead of revenue. Gross margin excludes commodity costs for natural gas and electricity.²³
- CECONY states that its multi-factor allocation formula is calculated in accordance with Cost Accounting Standard 403.

7. The corporate allocation factor for CEI costs has, in at least one year, created a cross-subsidy to one CEB, because gross margin is used in the allocation factor formula instead of operating revenue.

- The three competitive energy subsidiaries, CES, CED, and CEE competitively buy and sell commodity electricity and gas. In 2015, CES was not profitable and had a negative gross margin.
- The negative gross margin was used in the allocation formula according to the modified accounting formula, resulting in CES reducing its share of corporate burden and receiving a cross-subsidy. **Exhibit X-8** compares the current 2015 allocation formula using gross margin to the adjusted allocation formulas using operating revenue and to an allocation not based on revenue at all. CES would receive an eightfold increase in corporate burden if the allocation were based on operating revenue rather than gross margin. This would be almost half the amount allocated to O&R. Omitting revenue entirely from the calculation results in CES receiving about twice the allocation based on gross margin.

²² DRs 840-B and 906-B

²³ Cost Accounting Standard 403 is promulgated by the Cost Accounting Standards Board of the United States. Administratively, the CASB is a function located within Office of Federal Procurement Policy. The CASB is an independent statutorily-established (41 U.S.C. 1501 et seq., formerly, 41 U.S.C. 422) Board consisting of five members: the OFPP Administrator, who serves as the chairman, and four members with experience in Government contract cost accounting, two from the Federal government (DOD and GSA), one from industry, and one from the accounting profession. The Board has the exclusive authority to make, promulgate, and amend cost accounting standards and interpretations designed to achieve uniformity and consistency in the cost accounting practices governing the measurement, assignment, and allocation of costs to contracts with the United States.

The Board's regulations are codified at 48 CFR, Chapter 99. The standards are mandatory for use by all executive agencies and by contractors and subcontractors in estimating, accumulating, and reporting costs in connection with pricing and administration of, and settlement of disputes concerning, all negotiated prime contract and subcontract procurement with the United States in excess of \$700,000, provided that, at the time of award, the contractor or subcontractor is performing any CAS-covered contracts or subcontracts valued at \$7.5 million or greater. Source: Office of the White House - https://www.whitehouse.gov/omb/procurement_casb/



Exhibit X-8
Adjusted 2015 Allocation Rates

Company	2015 Rate based on gross margin (Percent)	2015 Adjusted Rate based on operating revenue (Percent)	2015 Omitting Revenue and Gross Margin (Percent)
CECONY	91.26	88.18	90.50
O&R	7.09	7.15	7.27
CSS	0.11	0.11	0.17
CEE	0.38	0.54	0.28
CES	0.42	3.33	0.90
CED	0.75	0.69	0.88
Total	100.00	100.00	100.00

Source: DR 13-B Attachment 2, NorthStar analysis

- CECONY justifies the gross margin calculation based on the fact that revenues fluctuate significantly based on changing commodity costs, commodity costs being a simple pass thru, and that the use of revenues would result in an allocation of costs not commensurate with the benefits received.²⁴ While there is merit to this argument, a negative outcome from the formula produces an unintended consequence and potential cross-subsidy.

8. Occupancy costs for shared facilities are not allocated appropriately between O&R and CECONY. CECONY and O&R maintain separate facilities from the CEBs.

- CECONY has assigned 13 employees to office space at O&R for Property Tax, Employee Benefits, Real Estate, and Internal Audit.²⁵
 - The salaries and benefits associated with these employees are part of the Shared Services cost pool.
 - Facility charges are not included in the cost pool. This is inconsistent with the shared services cost pool methodology used by CECONY and O&R.
 - Consistent methodologies would require O&R to invoice CECONY for the portion of the office space occupied by these personnel as part of their shared services invoice at the 92.7 percent rate.
- CECONY appropriately allocates office space for shared officers, manager and directors. Each is polled bi-annually to determine what percent of time is allocated to each company. The facility costs are calculated based on square footage for the office and support staff and follow the salary costs.²⁶

²⁴ DR 840-B

²⁵ DR 811-B

²⁶ DRs 14-B and 254-B



9. Payments for intercompany charges and allocations are generally received on-time and in accordance with commercial terms.

- Invoices are prepared monthly and payments are due in 30 days – a commercially acceptable standard.²⁷
- Payments between O&R and CECONY are accomplished through intercompany transfers.²⁸ Payments between CECONY and CEI and the CEBs are accomplished through bank wires.²⁹
- NorthStar reviewed the payment history of invoices payable to CECONY for the 18-month period from January 2014 and June 2015 and found:
 - The CEBs and CEI paid invoices on time in 15 of the 18 months.
 - The CEBs and CEI were late twice by a day or two.
 - In January 2014, all invoices were paid over a month late by the CEBs.³⁰

10. The current organization of the regulated utilities and their unregulated subsidiaries reflect an appropriate separation. CECONY employees who currently serve on of the Boards of the CEBs are not in positions that would normally cause a conflict of role, oversight or control. However, there is no process that would limit the Company from appointing other executives with more sensitive roles in the future. Some employees of CECONY may at times perform services for one or more CEB.³¹ NorthStar found no instances of inappropriate employees working for CEBs.

- Three officers of CECONY serve as Directors on the Boards of each of the competitive energy businesses as shown in **Exhibit X-9**.³²

**Exhibit X-9
Shared Officers**

CECONY Officer	CECONY Title	CEB position
Joseph Oates	Senior Vice-President Business Shared Services	Director and Chair of each CEB Board
Robert Hoglund	Chief Financial Officer	Director of each CEB
Elizabeth Moore	General Counsel	Director of each CEB

Source: DR 26

²⁷ DR 254-B

²⁸ DR 744-B

²⁹ DR 904-B

³⁰ DR 812-B

³¹ DR 53-B

³² DR 294-B



11. Shared services provided for competitive businesses do not provide an opportunity for transfer of confidential information; however, the sharing of CECONY officers with the CEBs, as noted above could provide a conduit for the transfer of confidential information.

- Shared services are limited to common corporate functions such as payroll, human resources, accounting and finance.
- Core utility functions such as engineering, supply procurement, system planning and risk management functions that produce utility proprietary information are not shared services.
- NorthStar reviewed CEI, CECONY and CEB board meeting minutes and found no indication that the regulated utilities acquire information on behalf of the affiliates or share market analysis reports.
- CECONY shares only the Oracle EBS across the regulated companies. A firewall limits the CEBs' access to accounting data associated with their own activities.
- NorthStar found no indication that CECONY or O&R share competitive intelligence with the CEBs.
 - CEBs have limited access to computer systems and data sources.
 - Core utility functions such as customer service and commodity procurement are not shared services.
 - CEBs are geographically separated from any of the regulated utilities.

12. Shared organizational roles are appropriate as they predominantly provide shared services related to corporate oversight.

- CECONY has 17 employees with responsibilities across CEI, the regulated utilities and the CEBs.³³
- The executives of O&R are the same as those for Pike and Rockland Electric except for the Treasurer. There are no employees at either Pike or Rockland Electric. Employees of O&R perform all work and make all management decisions. In effect, O&R, Pike and Rockland operate as an integrated gas and electric utility with segregated accounting.

13. Adequate controls exist to prevent cross-subsidization among affiliated entities.

- Policies and procedures specifically address the need to correctly report time.
- Employees are periodically reminded through a questionnaire to identify the type of work done for affiliates.³⁴

³³ DR 14-B



- The Oracle EBS collects costs and charges by affiliate.³⁵
- Affiliates receive monthly invoices for services.³⁶

14. NorthStar reviewed CECONY's procedures and found numerous documents that describe the need for vigilance by employees in avoiding any inappropriate transactions with affiliates.³⁷ However, NorthStar also found that CECONY did not follow its own procedures in at least one key area.

- NorthStar found no instances of inappropriate transactions with affiliates.
- One of the procedures described the existence of a Regulatory Compliance Committee that is responsible for overseeing affiliate compliance. During the interview with the newly appointed Chair of the Committee, she stated that the Committee was responsible for overseeing FERC compliance and that she was not aware that there were affiliate transaction rules promulgated by the state regulators.³⁸
- In response to a data request for copies of Agendas and Minutes for all meetings of the Affiliate Transaction Committee ("ATC" which preceded the Regulatory Compliance Committee) from 2010 to current, the Company responded that it "...has no agendas or minutes of the ATC for the period 2010 through April 18, 2012".³⁹ This is the period that the last currently employed chair of the ATC presided over the committee.

D. RECOMMENDATIONS

1. Replace the spreadsheet-based affiliate billing process with an Oracle based or other compatible billing system.
2. Develop a corporate cost allocation manual that provides an overview of all allocations in the CEI enterprise and specific account numbers relating back to the shared services organization.
3. Replace the three-factor allocation formula for CEI costs with a more appropriate formula..
4. Establish CEI guidelines or clarify the Code of Conduct before appointment of future executives to the Boards of CEBs to ensure that executives with current positions in roles at the utilities related to the business engaged in by the CEB do not serve on their Boards.
5. Follow CECONY internal procedures regarding oversight of affiliate transactions. Affiliate transactions should be a part of the responsibilities of the Regulatory Compliance Committee.

³⁴ DR 52-B Attach 4

³⁵ DR 40-B

³⁶ DRs 5-B, 254-B and 808-B

³⁷ DR 51

³⁸ IR 86

³⁹ DR 331

