CONSOLIDATED EDISON COMPANY OF NEW YORK, INC.

IVAN KIMBALL – ELECTRICITY SUPPLY

TABLE OF CONTENTS

Page

PURPOSE OF TESTIMONY 3

HISTORICAL SUPPLY COSTS 4

PROJECTED SUPPLY COSTS 11

COST SAVING INITIATIVES 18

SYSTEM ENHANCEMENTS 25

TARIFF CHANGES 44

Q. Please state your name, title, employer, and business address.

A. My name is Ivan Kimball. I am Vice President, Energy Management for Consolidated Edison Company of New York, Inc. ("Con Edison" or the "Company"). My office is located at 4 Irving Place, New York, New York 10003.

Q. Please describe your responsibilities in that position.

A. I am responsible for providing the overall strategic planning and direction for forecasting service area demand, evaluating electric, natural gas, and steam resource options, and procuring electricity and natural gas. I perform these functions for the customers of Con Edison, Orange and Rockland Utilities, Inc. ("O&R"), Rockland Electric Company ("RECO"), and Pike County Light & Power Company ("Pike").

Q. Please describe your professional background.

A. I have been in my current position since July 2012. From August 2008 to June 2012 I was Director, Electricity Supply for Con Edison. In that position I was responsible for day-to-day electricity supply operations, including the scheduling of generation and load bids with the New York Independent System Operator ("NYISO") and neighboring control areas; developing the overall

electric power procurement plans for full service customers; developing and implementing Con Edison's electric hedging program; strategically evaluating and participating in capacity and transmission congestion contract ("TCC") auctions; managing contractual rights with various non-utility generators; and processing monthly invoices for wholesale purchases and sales of capacity, energy, and TCCs for Con Edison and its affiliates, O&R, RECO, and Pike. From December 1998 to August 2008, I was employed by Consolidated Edison Energy, Inc. ("Con Edison Energy") where I was most recently the Director of Asset Management. My responsibilities included management of the business aspects of the generating facilities owned by Consolidated Edison Development, Inc. ("Con Edison Development") in New England and other generating facilities with whom Con Edison Energy had contracts. This included day-to-day scheduling, fuel procurement, electricity market sales and planning, and associated regulatory and accounting matters. From September 1987 to December 1998, I was employed by Con Edison in various positions of increasing responsibility.

Q. Briefly state your educational background.

A. I received a Bachelor of Science degree and a Master of Science degree in Nuclear Engineering from Rensselaer Polytechnic Institute in May 1986 and September 1987, respectively.

Q. Have you previously testified before the New York Public Service Commission ("Commission")?

A. Yes. I have testified before the Commission in Cases 09-E-0428 and 13-E-0030.

PURPOSE OF TESTIMONY

Q. What is the purpose of your testimony in this proceeding?

A. The purpose of my testimony is twofold. First, I describe Con Edison's historical and projected wholesale electric supply purchases for the Company's full service customers. Historical supply purchases cover the period from January 2010 through December 2014 and projected supply purchases cover the period from January 2016 through December 2020, which includes the rate year. This section of the testimony also describes the Company's efforts to minimize supply costs to customers.

Second, I discuss incremental capital and O&M costs that the Company expects to incur for system enhancements relating to the implementation of the Data Analysis and Reporting Tool, the nMarket Upgrade/Replacement Project,

Transmission Owners Data Reporting System Next Generation, and Metrix IDR Upgrade.

HISTORICAL SUPPLY COSTS

Q. What are the Company's objectives when purchasing electric supply for its full service customers?

A. The Company seeks the lowest reasonable electric purchase costs for its customers, subject to reliability and contractual constraints. As part of this objective, the Company also seeks to mitigate price volatility.

Q. In what ways does the Company accomplish these objectives?

A. The Company pursues commercial opportunities, such as favorable contract restructurings or extensions. The Company also pursues structural and tariff changes in the NYISO's wholesale electric markets that are beneficial to the Company's customers through active participation in the NYISO governance process and through filings with the Federal Energy Regulatory Commission ("FERC"). Where appropriate, the Company pursues certain matters before FERC through litigation, settlement and mediation conferences, and the filing of comments and petitions in an effort to obtain just and reasonable wholesale

electric prices for its customers. I discuss these efforts later in my testimony.

Q. Please describe, in general terms, how Con Edison procures electric supply for its full service customers.

A. Electric energy and capacity are obtained from three main sources: contract supplies with non-utility generators ("NUG"), Entergy Nuclear Power Marketing, LLC ("Entergy"), and Astoria Energy, LLC ("Astoria Energy"); Con Edison's own steam-electric generation; and purchases made primarily from the NYISO's energy, capacity, and ancillary services markets. The Company also uses financial hedges to mitigate price volatility for its customers.

Q. I show you a one-page document entitled, "CONSOLIDATED EDISON COMPANY OF NEW YORK, INC. - WHOLESALE ELECTRICITY SUPPLY COSTS – CALENDAR YEARS 2010 THROUGH 2014," and ask whether it was prepared under your supervision and direction?

A. Yes.

MARK FOR IDENTIFICATION AS EXHIBIT ___ (ES-1)

Q. What does Exhibit ___ (ES-1) show?

A. Exhibit ___ (ES-1) illustrates the costs from January 1, 2010 through December 31, 2014 for energy, capacity, and

other services acquired on behalf of the Company's full service customers. This exhibit shows a material decline in the volume of the Company's total energy supplied, which is primarily due to customers migrating from full service to retail access.

Q. Please describe the Company's firm supply contracts.

A. As noted in Exhibit ___ (ES-1), about 2,700 MW (approximately 42% of the Company's capacity supply) and almost 14 million MWh (approximately 65% of the Company's energy supply) were provided by the Company's seven firm contracts in 2014. Five of these are mandated NUG contracts with Public Utilities Regulatory Policy Act ("PURPA") units, one is with Entergy, and one is with Astoria Energy.

Q. I show you a one-page document entitled, "CONSOLIDATED EDISON COMPANY OF NEW YORK, INC. - FIRM CONTRACTS AS OF DECEMBER 31, 2015," and ask whether it was prepared under your supervision and direction?

A. Yes.

MARK FOR IDENTIFICATION AS EXHIBIT ___ (ES-2)

Q. What does Exhibit ___ (ES-2) show?

A. Exhibit ___ (ES-2) sets forth the term and capacity of each of the firm supply sources noted above, except for

the Selkirk, Sithe, and Indeck contracts, which expired in August 2014, October 2014, and June 2015, respectively.

Q. Please describe the Company's steam-electric generation.

A. As noted in Exhibit ___ (ES-1), 711 MW (approximately 11% of the Company's capacity supply) and over 2.7 million MWh (approximately 13% of the Company's energy supply) were provided by the Company's steam-electric generation facilities in 2014. Fuel costs for this generation are allocated between the steam and electric services in a manner established by the Commission.

Q. Please describe the Company's spot purchases.

A. The vast majority of spot energy purchases are made from the NYISO, primarily in its day-ahead market, but also from its real-time market. The NYISO prices energy in both of those markets at eleven different load zones. About 85% of Con Edison's customers' consumption is in NYISO's Zone J, the New York City ("NYC") load zone. The remainder is located in NYISO Zones H (Millwood) and I (Dunwoodie). The Company also purchases excess energy from non-PURPA NUGs located in its territory. Such energy is typically purchased at the NYISO spot price.

Spot capacity purchases are made from the NYISO's capacity markets. The NYISO administers four capacity market areas: one for NYC, one for Long Island, one for Lower Hudson Valley ("LHV"), and one for rest-of-state ("ROS"). The majority of Con Edison's capacity obligation is in NYISO's NYC market; the remainder is in the NYISO's LHV and ROS markets. The NYISO conducts auctions that allow load serving entities ("LSEs"), like Con Edison, to purchase capacity for a one-month period or for periods of up to six months. Any LSE with capacity obligations not met by the sum of contract purchases and purchases made in these "strip" or monthly auctions is provided capacity by the NYISO from spot auctions the NYISO conducts monthly. Prices in each spot auction are set at the intersection of a demand curve, which is administratively established through the NYISO's governance processes and approved by FERC, and the supply offer curve. One aspect of the spot auction is that it is a single clearing price auction, which means that all supply offers in NYISO's spot auction that are below the intersection of the administrative demand curve and the supply offer curve receive the spot market clearing price. It is typical for more capacity to be available

for sale than is required to be purchased. Such excess capacity is purchased by NYISO on behalf of the LSEs, which are obligated by the NYISO tariff to purchase such "excess capacity."

Q. Please describe the Company's financial hedging practices.

A. The Company uses financial hedge products to mitigate the volatility of its spot purchases. Products include fixed-for-floating price swaps, also known as contracts for differences ("CFDs"), options, and TCCs. CFDs are typically traded on a "5x16" basis, meaning their value is computed over the 16 peak hours (7 AM to 11 PM, prevailing time) on non-NERC-holiday weekdays. CFDs may also be traded on an "around the clock" basis, priced at the arithmetic average of all 24 hours in a day, or on a "load shaped" basis, where hourly spot prices are weighted by an agreed upon set of weighting factors for each hour in a day to determine the CFD's settlement price. These "load shaped" CFDs may be settled against a fixed proportion of the LSE's hourly actual demand and may also be known as "slice of system" hedges.

Options typically provide a financial benefit to the option holder when the contracted parameters, such as

spot price, temperature, or both, exceed prior agreed-upon thresholds. The premiums or purchase costs of such options are related to the volatility of the underlying product, the length of time prior to delivery, and the agreed-upon strike price and/or temperature threshold.

TCCs are essentially fixed-for-floating price swaps that provide a hedge against fluctuations in the transmission costs associated with moving energy from its point of injection to its point of withdrawal.

Q. What has been the impact of the Company’s hedging program?

A. Exhibit ___ (ES-1) identifies the net impact of the Company’s financial hedging from 2010 through 2014, including the cost of those hedges. The exhibit shows that the Company’s hedging practices stabilized wholesale supply prices for customers, which is the objective of the program. In accordance with the PSC’s August 28, 2006 Order Instituting Proceeding and Soliciting Comments and its April 19, 2007 Order Requiring Development of Utility Specific Guidelines for Electric Commodity Supply Portfolios and Instituting a Phase II to Address Longer-Term Issues in Case 06-M-1017, the Company maintains a supply portfolio that is hedged but not 100% hedged for

its residential and small commercial customers, and meets with Commission Staff at least once a year to review its hedging performance and plans.

PROJECTED SUPPLY COSTS

Q. Have you prepared a projection of generation capacity for the Company's steam-electric plants?

A. Yes.

Q. I show you a one-page document entitled, "CONSOLIDATED EDISON COMPANY OF NEW YORK, INC. - STEAM-ELECTRIC GENERATION CAPACITY (MW) PROJECTED FOR 2016 AND 2017," and ask whether it was prepared under your supervision and direction?

A. Yes.

MARK FOR IDENTIFICATION AS EXHIBIT ___ (ES-3)

Q. What does Exhibit ___ (ES-3) show?

A. Exhibit ___ (ES-3) shows the capacity from the Company's retained generation located at its steam-electric plants (collectively referred to as "steam-electric generation").

Q. Have you also prepared a projection of wholesale energy costs?

A. Yes.

Q. I show you a one-page document entitled "CONSOLIDATED EDISON COMPANY OF NEW YORK, INC. - PROJECTION OF WHOLESALE ELECTRICITY SUPPLY COSTS – RATE YEARS ENDING DECEMBER 2016 through DECEMBER 2020" and ask whether it was prepared under your supervision and direction?

A. Yes.

MARK FOR IDENTIFICATION AS EXHIBIT ___ (ES-4)

Q. What does Exhibit ___ (ES-4) show?

A. Exhibit ___ (ES-4) sets forth my projections of electricity supply costs from January 2016 through December 2020, based upon the forecast of full service sendout provided to me by the Company's Electric Forecasting Panel.

Q. Please describe the methodology used to develop these projections.

A. As noted earlier, capacity and energy are supplied from three major categories: firm contracts, steam-electric generation, and spot purchases.

Firm contract capacity and energy costs were projected based on existing contract terms and reflect the historical dispatch of the units. In cases where firm contract terms rely on a projection of the change in the Consumer Price Index ("CPI") for this region, I used

the CPI forecast based on the October 10, 2015 publication of the “Blue Chip Economic Indicators,” for 2015 and 2016, which showed an annual CPI growth of 0.1% and 1.9%, respectively. For years 2017 through 2020, I used the CPI forecast based on the October 10, 2015 Long Range Forecast publication of the “Blue Chip Economic Indicators,” which shows growth in 2017, 2018, 2019, and 2020 as 2.2%, 2.3%, 2.3%, and 2.2%, respectively. Most firm contract energy costs are indexed to some fuel supply such as the delivered cost of natural gas or fuel oil. Natural gas price projections were based on November 2015 forecasts published by Wood-Mackenzie, a research and consulting firm that provides commercial analysis and strategic advice for the global energy, metals, and mining industries, for commodity delivered to the Henry Hub, Louisiana.

Fuel oil forecasts were determined based on the relationship of fuel oil costs and crude oil prices over the period from January 2017 to December 2019 in the Wood-Mackenzie forecasts, the relationship of the NYMEX crude oil and natural gas futures prices as of November 25, 2015, and the Wood-Mackenzie natural gas price forecasts described above.

Steam-electric generation costs were projected using the PROMOD cost optimization model. Steam sendout projections and fuel price forecasts were input into PROMOD, which models the operating characteristics of the Company's steam-electric units. The natural gas prices were based on the Wood-Mackenzie forecasts described above. Natural gas "basis differentials," reflecting the cost of interstate transportation from Henry Hub to Transco Zone 6 (NYC), were then applied to the natural gas prices. This delivered cost of natural gas was then increased to reflect the cost of taxes on generation fuel, yielding the natural gas price forecast. These forecasted natural gas basis differentials were provided by Wood-Mackenzie. The fuel oil forecasts were based on the Wood-Mackenzie forecasts and NYMEX futures prices as described above. This delivered cost of fuel oil was then increased to reflect the cost of taxes, shipping and handling, yielding the fuel oil price forecast. Based on the modeled dispatch of the steam-electric units and a projected allocation of costs from Steam Operations for "processing charges," such as water, chemicals, and labor, the costs and volumes of energy available for

electric supply were determined, as summarized on Exhibit ___ (ES-4).

Q. Please explain why external services are used to develop natural gas and fuel oil price projections.

A. Natural gas and fuel oil prices are subject to significant period to period variations due to supply interruptions, economic and regulatory changes, and general market forces. An external consulting firm like Wood-Mackenzie can leverage its industry experience and market intelligence in producing commodity price projections.

Q. Please continue with your description of Exhibit ___ (ES-4).

A. Spot capacity purchase costs are based on a projection of capacity supply margins in the NYC, LHV, and ROS regions as provided by the NYISO; the application of these margins to expected demand curve parameters to project prices; and then the application of these prices to the Company’s expected spot capacity requirements in the NYC, LHV, and ROS regions. Excess capacity costs purchased by the NYISO and allocated to LSEs, as described earlier, are also included in these cost projections.

Spot energy costs are based on market values as of December 3, 2015. These price projections were then applied to the forecast of full service volumetric requirements as provided to me by the Company's Electric Forecasting Panel, after deducting energy projected to be supplied from firm contracts and steam–electric generation.

Q. Please continue with your description of spot energy costs in Exhibit __ (ES-4).

A. I note that this exhibit shows a material change in the volume of the Company's spot purchases, which is primarily due to the expiration of the NUG contracts as follows: Astoria in April 2016, Linden in April 2017, and Entergy in December 2017.

To mitigate some of the need for additional spot purchases and the associated price volatility of spot purchases, the Company recently implemented a request for proposal ("RFP") for physical and financial supply. Through the RFP process, the Company purchased from multiple counterparties 500 MW of around-the-clock NYISO Zone J (New York City) financial energy consisting of both fixed priced and natural gas price-indexed products, and 1,000 MW of New York City unforced capacity ("UCAP")

consisting of both financial and physical fixed priced capacity. Energy products were purchased for one-year terms for each of the three calendar years 2016 through 2018. Capacity products were purchased for one-year terms for each of the three capability years commencing May 2016, May 2017, and May 2018.

Q. Has the net impact of the RFP been included in these projections?

A. Yes, they are included in the costs of the firm contracts on the exhibit.

Q. Does the Company plan to utilize the RFP process going forward rather than procure any more financial hedges?

A. The Company plans to conduct annual RFPs for both energy and capacity up to three years out in the future. However, the RFPs will complement, rather than replace, the financial hedges in the Company’s hedge plan. This will allow the Company to further diversify its portfolio to mitigate wholesale supply price volatility to our customers. In addition, by staggering purchases up to three years out, the annual RFPs over time should reduce the need for spot purchases to volumes comparable to historical levels before the expirations of the NUG contracts.

Q. Has the net impact of financial hedges been included in these projections?

A. Hedges have been assumed to be “at the money,” thereby not affecting customers’ prices for the purposes of these cost projections. However, financial hedges command premiums for reducing buyers’ risks and so would be expected to increase costs marginally over the long term.

Q. Are you aware of the Commission’s proceeding relating to New York State’s Clean Energy Standard (Case 15-E-0302) and the whitepaper issued on January 25, 2016?

A. Yes.

Q. What impact on the Company will the Commission’s proposals have?

A. We have not been able to fully assess the Commission’s proposals. We are following the proceeding and evaluating its impact. We will address any expected impacts on Update.

COST SAVING INITIATIVES

Q. What efforts does the Company undertake to minimize supply costs to customers?

A. A primary objective of the Company is to actively promote customers’ interests by advocating for the adoption of wholesale market rules that maintain reliability and

create fair and competitive market prices for all customers, including the Company's full service customers. Moreover, the Company has consistently advocated for the implementation and maintenance of market mitigation measures necessary to prevent the influence of market power on electric prices. The Company aggressively pursues NYISO market structure and tariff changes that are beneficial to its customers through active participation in the NYISO's governance process and in FERC proceedings.

Q. Please give some examples of the Company's efforts in these NYISO processes and FERC proceedings.

A. Con Edison has been active in promoting rules that allow new resources fair access to the wholesale markets. For example, the Company led the push for an exemption to NYISO's buyer-side mitigation rules for unsubsidized merchant resources that have no incentive to exercise buyer-side market power ("competitive entry exemption"). After meeting resistance in the NYISO stakeholder process, the Company filed a complaint at FERC. FERC agreed with the Company and ordered NYISO to adopt a competitive entry exemption. A competitive entry exemption will benefit customers by permitting

competitive generators to enter the capacity market and offer to sell at a lower cost than if they were mitigated and made subject to an offer floor.

Con Edison is also advocating for fair demand response participation in the NYISO capacity market. For example, in 2015 the Company challenged two FERC orders that address demand response. In the first order, FERC reversed a five-year old ruling that made payments from the Company's Distribution Load Relief Program to Special Case Resources exempt from the applicable offer floor. In the second order, FERC denied the Public Service Commission's request for an exemption from mitigation for certain resources, including demand response resources. The Company sought rehearing at FERC on both issues.

Con Edison also participates actively in most NYISO projects and proceedings and secures changes that benefit customers. For example, in the recent process to review NYISO's 2016 Annual Project List, the Company advocated successfully for a project that would define the rules for eliminating NYISO's LHV capacity zone after new transmission is built that would eliminate the zone's transmission constraint. The Company is concerned that

without such rules elevated capacity prices in the LHV zone will persist unneccesarily.

The Company also persuaded NYISO to improve its Consumer Impact Process, which is intended to consider how proposed market design changes impact customers. Under the new rules, NYISO will analyze customer impact earlier in the process and indicate at the start of a market design initiative whether it is expected to increase customer costs by $50 million or more annually. In addition, NYISO will provide its cost estimate as a range, and include all of its underlying assumptions for stakeholder review. Finally, as requested by Con Edison, NYISO will provide stakeholders with alternative market design changes and their cost impacts. Consequently, all stakeholders will have the information they need to consider the impact of proposed changes on customers, and react accordingly.

As another example, the Company argued successfully that NYISO’s comprehensive reliability report should assume that a number of generators would return to service, which had the effect of saving customers money by removing the need for alternative projects. The Company also advocated successfully for more balanced

language with respect to reliability risks over the planning period than appeared in the initial report. As a result, the base case in the report showed no reliability issues during the 10 year term, other than local transmission security issues upstate.

Similarly, the Company successfully persuaded NYISO to delay implementing changes to its Shortage Pricing rules after concerns arose about their impact on customers statewide. Rather than implement the new rules in June 2015, NYISO implemented them in Novemember 2015, as the most significant benefits should occur over the winter period.

The Company was also successful in altering a NYISO proposal to revise its current practice of establishing the price paid to demand response resources and generators, in real-time, during reliability-based demand response activations – Special Case Resources and Economic Demand Response Program (Scarcity Pricing). Consistent with the Company’s long-held preference, the NYISO will be improving upon the current after-the-fact price correction by including pricing and dispatch decisions in the real-time software. NYISO’s consumer impact assessment demonstrates that when reliability-

based demand response programs are activated, as they were six times in 2013, the resulting efficiencies could reduce customer costs up to $46 million annually statewide. Implementation is expected summer 2016.

The Company has also continued its leadership in support of market structures designed to improve efficiency between regional markets, such as the Market to Market and Coordinated Transaction Scheduling (CTS) initiatives. In 2015, Con Edison participated actively in finalizing CTS with ISO-New England, Inc. (“ISO-NE”) (CTS with PJM was put in place the year prior). New York imports substantial amounts of power annually, and CTS should enable more frequent and flexible scheduling with ISO-NE. This should translate into cost savings for the Company’s customers by facilitating access to external resources that are lower-cost than available native resources. CTS with ISO-NE was approved by FERC and became effective December 15, 2015. CTS is expected to reduce wholesale power costs for electric consumers in New York by approximately $3 million dollars between 2016-2020.

Finally, the Company assumes leadership roles within NYISO stakeholder groups and industry-wide organizations.

Q. Are there any Company programs or projects that will reduce supply costs to customers?

A. Yes, the Company has recently installed General Electric ("GE") Advanced Hot Gas-Path (AGP) hardware on the East River Generating Station Units 1 and 2 Combustion Turbine Generators, which increased the total output of the two units by up to 24 MW. The Company is following the NYISO Large Facility Interconnection Procedures to be approved for a total increase of 24 MW in capacity resource interconnection service ("CRIS") and energy resource interconnection service ("ERIS"). Once the full 24 MW of CRIS and ERIS is approved by the NYISO, the annual supply cost savings of this initiative from avoided capacity and energy purchases for Con Edison's full service customers net of the fuel consumption of the additional output is estimated to be about $7 million.

Q. Any prospective programs that would reduce supply costs to customers?

A. Yes. As the Company has explained in comments to the Commission regarding new initiatives to help meet the State's Renewable Portfolio Standards (RPS) goals, Con Edison supports utility ownership of renewable facilities over any power purchase agreement (PPA) arrangements.

Utility ownership will result in lower costs to our customers than PPAs would, while capturing the continued benefits of the renewable facilities for our customers over the life of the facilities instead ending at the expiration of the PPAs.

SYSTEM ENHANCEMENTS

Q. I show you a one-page document entitled, “CONSOLIDATED EDISON COMPANY OF NEW YORK, INC. – ELECTRICITY SUPPLY SYSTEM ENHANCEMENTS – CAPITAL ($000)” and ask whether it was prepared under your supervision and direction?

A. Yes.

MARK FOR IDENTIFICATION AS EXHIBIT ___ (ES-5)

Q. Please explain Exhibit ___ (ES-5).

A. This exhibit lists the four system enhancements I will be speaking to and shows their associated capital costs. For these four system enhancements in total, it is estimated that the Company will incur system installation costs totaling an estimated $1.92 million in Rate Year 1 (calendar year 2017), $2.34 million in Rate Year 2 (calendar year 2018,) and $5.34 million in Rate Year 3 (calendar year 2019).

Q. Are there projected additional O&M expenses associated with these System Enhancements?

A. Yes, there are.

Q. I show you a one-page document entitled, “CONSOLIDATED EDISON COMPANY OF NEW YORK, INC. – ELECTRICITY SUPPLY SYSTEM ENHANCEMENTS – O&M ($000)” and ask whether it was prepared under your supervision and direction?

A. Yes.

MARK FOR IDENTIFICATION AS EXHIBIT ___ (ES-6)

Q. Please explain Exhibit ___ (ES-6).

A. This exhibit lists the four system enhancements I will be speaking to and shows their associated O&M expenses. For these four system enhancements in total, it is estimated that the Company will incur additional O&M expenses totaling an estimated $340,000 in Rate Year 1, $455,000 in Rate Year 2 and $1,032,000 in Rate Year 3.

Q. Starting with the first System Enhancement, what is the Data Analysis and Reporting Tool?

A. The Data Analysis and Reporting Tool is a new system that will aggregate and standardize market data from various systems within and external to the Company to enhance the Company’s analytical and reporting capability and support its ability to function as a market participant in the wholesale energy markets.

Q. Please describe why the Data Analysis and Reporting Tool is necessary.

A. Dynamic changes in the wholesale energy marketplace, which include regulatory changes that could impact pricing, regulatory reporting requirements such as Dodd-Frank, and new pipeline projects and supply sources that could also impact energy pricing, warrant a Data Analysis and Reporting Tool that will help the Company: (1) keep up with any regulatory changes that could impact energy costs to its customers, (2) increase efficiency by making data and results available in a standardized format that can be used to generate reports automatically for internal use, settlements, and regulatory reporting, (3) decrease the possibility for errors by automating processes as appropriate, and (4) maintain Sarbanes-Oxley ("SOX") controls and audit capabilities.

Q. I show you a three-page document entitled, "CONSOLIDATED EDISON COMPANY OF NEW YORK, INC. – DATA ANALYSIS AND REPORTING TOOL – CAPITAL" and ask whether it was prepared under your supervision and direction?

A. Yes.

MARK FOR IDENTIFICATION AS EXHIBIT ___ (ES-7)

Q. Please explain Exhibit ___ (ES-7).

A. This exhibit describes the Data Analysis and Reporting Tool Project and shows the associated capital costs that are planned to be incurred in 2017 and 2018. It is estimated that the Company will incur system installation costs totaling an estimated $1.5 million in calendar year 2017 and an estimated $1.1 million in calendar year 2018 for a total of $2.6 million.

Q. I show you a three-page document entitled, “CONSOLIDATED EDISON COMPANY OF NEW YORK, INC. – DATA ANALYSIS AND REPORTING TOOL – O&M” and ask whether it was prepared under your supervision and direction?

A. Yes.

MARK FOR IDENTIFICATION AS EXHIBIT ___ (ES-8)

Q. Please explain Exhibit ___ (ES-8).

A. This exhibit describes the Data Analysis and Reporting Tool Project and the associated O&M costs that are planned to be incurred each year starting in 2018. The $75,000 per year is based on hiring a 0.5 full time equivalent (“FTE”) of Information Technology (“IT”) labor support. In comparison to the Company’s wholesale energy transactions, which the Data Analysis and Reporting Tool will support, the revenue requirement of the $2.6 million

project cost plus the $75,000 in annual O&M is about 0.01% of the annual wholesale supply costs.

Q. What is the nMarket Upgrade/Replacement Project?

A. The nMarket Upgrade/Replacement Project will upgrade or replace the existing nMarket System in order to support Electricity Supply's Physical Wholesale business requirements in implementing New York State's Reforming the Energy Vision ("REV") Initiative. These business requirements consist of the following:

- Electric supply and distributed energy resource ("DER") purchase, scheduling, and invoicing
- Regulatory and Sarbanes-Oxley (SOX) compliance
- Interfacing with other internal systems

Q. Please describe why the nMarket Upgrade/Replacement Project is necessary.

A. The implementation of the REV Initiative will expand the participation of DERs in the wholesale energy markets as well as extend the electricity markets down to the network and distribution levels. This will add complexity to Electricity Supply's Physical Wholesale business requirements, creating the need to upgrade or replace the existing nMarket System.

Q. I show you a three-page document entitled, "CONSOLIDATED EDISON COMPANY OF NEW YORK, INC. – nMARKET UPGRADE/REPLACEMENT PROJECT (DESIGN & IMPLEMENTATION) – CAPITAL" and ask whether it was prepared under your supervision and direction?

A. Yes.

MARK FOR IDENTIFICATION AS EXHIBIT ___ (ES-9)

Q. Please explain Exhibit ___ (ES-9).

A. This exhibit describes the nMarket Upgrade/Replacement Project and shows the associated capital costs that are planned to be incurred in 2019 and 2020. It is estimated that the Company will incur system installation costs totaling an estimated $4.1 million in calendar year 2019 and an estimated $6.4 million in calendar year 2020 for a total of $10.5 million.

Q. I show you a three-page document entitled, "CONSOLIDATED EDISON COMPANY OF NEW YORK, INC. – nMARKET UPGRADE/REPLACEMENT PROJECT (DESIGN & IMPLEMENTATION) – O&M" and ask whether it was prepared under your supervision and direction?

A. Yes.

MARK FOR IDENTIFICATION AS EXHIBIT ___ (ES-10)

Q. Please explain Exhibit ___ (ES-10).

A. This exhibit describes the nMarket Upgrade/Replacement Project and the associated O&M costs that are planned to be incurred each year starting in 2017. Starting in 2017, additional Energy Management labor will be required, ramping up to 4.5 FTEs by 2019 to provide transactional support for the additional DERs that are expected to become available and participate in the markets, both existing and new ones, as result of REV. In comparison to the wholesale electricity supply costs to all customers in the Company's service area, revenue requirement of the $10.5 million project cost plus the $650,000 in annual O&M by 2019 is about 0.05% of the annual wholesale electricity supply costs.

Q. What are the other two planned capital projects?

A. The first is the Transmission Owners Data Reporting System ("TODRS") Next Generation project. TODRS is a program that reconciles certain costs between the NYISO and Energy Service Companies ("ESCOs"). The second project is the MetrixIDR Upgrade. MetrixIDR is a calculation engine that forecasts the daily electric and steam hourly load for the Company.

Q. Regarding TODRS Next Generation, please describe the existing TODRS and its function.

A. TODRS performs the Transmission Owner Energy Reconciliation and Load Forecast Tag reporting ("ICAP Tag") functions required by the NYISO. Energy Reconciliation is the process whereby the Transmission Owner determines the hourly contribution of each customer to actual metered zonal load recorded by the NYISO. ICAP Tag reporting determines the contribution of each customer to the forecasted annual electric peak. TODRS retrieves customer energy consumption data and supporting information from a number of sources, such as NYISO posted zonal load, the Customer Information System, the Retail Access database, the Recharge New York database, the Load Profile Display Program, and Meter Data Management database. TODRS then distributes consumption data through each hour during a month based on the customer's meter type, service class, and consumption patterns. The hourly data is then used to calculate monthly reconciled energy consumption and ICAP tags that are reported to the NYISO.

Q. Please describe the proposed upgrade to TODRS.

A. "TODRS Next Generation" will include a web interface where ESCOs and customers can view and download their hourly energy usage and capacity tag information online.

This upgrade will enhance the users experience by helping them find data quickly and effectively. It will also create an automated interface reporting process for other systems, such as MetrixIDR (described further below), to extract daily data. Finally, the proposed upgrade will assist the Company in implementing expected business requirements resulting from REV and Advanced Metering Infrastructure ("AMI") implementation projects. For example, one of the expected benefits from TODRS interfacing with MetrixIDR is the ability to reconcile and forecast energy consumption/generation data for electric networks/radial feeders and distributed energy resources ("DER"), which will be a key component to further REV goals.

Q. What will be resulting features of the TODRS Next Generation project?

A. TODRS Next Generation is expected to:

- Connect TODRS to MetrixIDR, as described above.
- Enhance customer service to ESCOs by allowing the Company's Customer Service Representatives to trouble shoot billing errors and visualize customer data.

- Provide individual customers secure access to their ICAP and energy consumption information via existing web services.
- Provide a User Interface for ESCOs to aggregate data.
- Allow the Company to reconcile energy consumption data for 82 electric networks and 12 radial feeders.
- Implement REV program mechanisms so market participants can view and retrieve distributed resources data and ICAP Tag benefits.
- Provide data and analysis for distributed resources at electric network level.
- Enhance capability to process and store hourly billing data from AMI meters for energy consumption and ICAP Tag calculation.
- Provide access to Distribution Control Centers and Substation Operators.

Q. What are the other benefits and justification for this project?

A. Online access for ESCOs and customers to energy usage data, capacity requirements, and basic information about customers' consumption, will assist ESCOs in analyzing and targeting specific groups of customers. In addition,

the new User Interface will provide ESCOs a more accurate and effective system since transactions can be viewed online, and the system allows for Company personnel to readily troubleshoot and resolve reporting problems due to customer billing or metering issues. As NYISO regulatory and reporting requirements change, it is essential to upgrade the system.

Moreover, as the internal and external data systems that TODRS is connected to change or are modified, interfaces between TODRS and these systems will need to be updated accordingly. The existing TODRS will not be able to support new programs such as REV and AMI, nor will it be able to handle additional requests from market participants. Should a distribution network market materialize and TODRS is not upgraded, the Company will not be able to manage its ESCOs at the distribution level without significant increase in manpower and resources to meet the new requirements manually. Without the upgrade, the Company projects that one staff employee would need to be added to compile and manage customer consumption data and to communicate with local control centers and two additional staff employees would be necessary to create and manage Excel-based tools for electric

networks, radial feeders, DERs, and large customers, and to answer a large influx of customer inquiries on distributed resources data and ICAP tag information.

In addition, the upgrade will assist the Company in meeting evolving regulatory reporting requirements and improve forecasting abilities.

Q. I show you a four-page document entitled, "CONSOLIDATED EDISON COMPANY OF NEW YORK, INC. – NYISO Transmission Owner Data Reporting System - Next Generation – CAPITAL" and ask whether it was prepared under your supervision and direction?

A. Yes.

MARK FOR IDENTIFICATION AS EXHIBIT ___ (ES-11)

Q. Please explain Exhibit ___ (ES-11).

A. This exhibit describes the NYISO Transmission Owner Data Reporting System – Next Generation and shows the associated capital costs that are planned to be incurred between 2017 and 2020. The Company projects to spend approximately $1.8 million on this capital project, of which $200,000 will be spent in 2017, $600,000 in 2018, $600,000 in 2019, and $400,000 in 2020.

Additional details associated with this capital project are shown in Exhibit (ES-11).

Q. Are their additional O&M expenses associated with the TODRS Next Generation project?

A. Yes. There are additional staffing requirements.

Q. Please explain the additional staffing needed for this project.

A. As the Company, ESCOs, and customers become familiar with TODRS, one staff employee will be added starting in 2017 to handle customer inquiries, manage and analyze customer consumption data, and provide necessary reporting services to the Company, ESCOs and regulators. This employee will also be responsible to collect, verify, and manage data that will enable load forecasts for full service customers and service classes. To meet the needs of the AMI effort, a second full time staff employee will be added starting in 2019 to compile and manage the exponential growth of hourly consumption data collected into the TODRS database. Without proper data verification, compilation, and management, TODRS will fail to utilize the hourly consumption data properly due to system limitation and potential data issues. As part of REV, a third staff employee is expected to be added in 2020 to compile CECONY distribution areas/networks load and DER data. Combining with the staff supporting

MetrixIDR as described below, the team will provide hourly load forecast for CECONY distribution areas/networks, forecast DERs' contribution to the Weather Adjusted Peaks (WAPs) on a system wide basis and by network, and coordinate with the Company's Distribution Operations office on forecasted DER requirements for reliability.

Q. I show you a four-page document entitled, "CONSOLIDATED EDISON COMPANY OF NEW YORK, INC. – NYISO Transmission Owner Data Reporting System - Next Generation – O&M" and ask whether it was prepared under your supervision and direction?

A. Yes.

MARK FOR IDENTIFICATION AS EXHIBIT ___ (ES-12)

Q. Please explain Exhibit ___ (ES-12).

A. This exhibit describes the NYISO Transmission Owner Data Reporting System – Next Generation and shows the associated O&M expenses that are planned to be incurred between 2017 and 2020. The Company projects to spend approximately $140,000 in 2017, $80,000 in 2018, $182,000 in 2019, and by 2020 the ongoing O&M cost will be $284,000 per year. This is primarily for the three

additional full time employees and incremental IT support.

Additional details associated with this O&M expense is shown in Exhibit (ES-12).

Q. Regarding the MetrixIDR Upgrade, please describe the existing MetrixIDR System.

A. MetrixIDR performs the daily electric and steam hourly load forecasting that the Company's System Operation Department relies on to plan daily operation and that the Company's Electricity Supply Department uses to plan short term electric purchasing and generation scheduling.

Q. Please describe the upgrades proposed and why an upgrade needs to be made.

A. The Company proposes to upgrade MetrixIDR to the latest version supported by the vendor (ITRON). Without this upgrade, the vendor will no longer support the existing system as it becomes outdated by 2018. A fully-functioning MetrixIDR is important to the Company's daily forecasting. If the system ceases to work or fails to meet the Company's stringent forecasting accuracy standard, there can be increased challenges to daily operations.

In addition, the upgraded system will further REV goals by implementing forecasting models and installing the systems necessary to provide hourly load forecasts for the Company's distribution areas/networks and radial feeders. This will also enable the Company to forecast by network/load area on a daily basis. Should a distribution network market materialize and the MetrixIDR forecast calculation engine is not upgraded, the Company will need two additional staff employees to compile and manage network data, coordinate with Distribution Operations, and interface with other REV supporting staff. In addition, another three employees will be needed to create and manage network level and DER forecasting models, and to help manage the database, as much of the data verification and compilation will be performed manually. This would be five additional employees if MetrixIDR was not upgraded. With the upgrade and development of REV and AMI, we are already looking at increasing our staff by two additional full time employees.

Q. What will be the resulting benefits and features of upgrading MetrixIDR?

A. The Company expects that the upgrade will improve forecast reliability and accuracy, improve system reliability, enable distribution area and network hourly forecasting, and further REV goals. Forecasting accuracy leads to improved system operation efficiencies and lower energy supply costs. If a forecast is too high, more energy will be procured than needed. If a forecast is too low, energy will be procured at a premium, and there may be increased challenges to system operations. In addition, an upgraded MetrixIDR Load Forecasting System is expected to add the following new and enhanced features:

- Build 82 electric network hourly forecasts and 12 radial feeder hourly forecasts.
- Provide a mechanism to forecast DERs' contribution to the WAPs on a system wide basis and by electric networks, and to provide forecasts for future DERs.
- Provide access to Distribution Control Centers and Substation Operators to the MetrixIDR Load Forecasting System.
- Additional functionalities to improve forecasting accuracy, such as enabling statistical analysis on

daily data, and more control on how holidays can impact daily electric consumption.

- Add the capability of forecasting in five minutes intervals.
- Allow direct access to the database for custom reports, thus increasing our ability to analyze hourly consumption data by different categories (such as by area, network, total consumption level).
- Improve functionality to organize meter data within a particular area and to filter data by time period and other parameters.

Q. I show you a four-page document entitled, "CONSOLIDATED EDISON COMPANY OF NEW YORK, INC. – Metrix IDR Load Forecasting Upgrade – CAPITAL" and ask whether it was prepared under your supervision and direction?

A. Yes.

MARK FOR IDENTIFICATION AS EXHIBIT ___ (ES-13)

Q. Please explain Exhibit ___ (ES-13).

A. This exhibit describes the Metrix IDR Load Forecasting Upgrade and shows the associated capital costs that are planned to be incurred between 2017 and 2019. The Company projects to spend approximately $1.5 million on this

capital project, of which $220,000 is planned to be spent in 2017, $640,000 in 2018, and $640,000 in 2019.

Additional details associated with this capital project are shown in Exhibit (ES-13).

Q. Are there additional O&M expenses associated with the MetrixIDR Upgrade project?

A. Yes. There are staffing requirements.

Q. Please explain the additional staffing needed for this project.

A. One staff employee will be added starting in 2017 to compile, analyze, and manage consumption data at the distribution areas/network level and for DERs. This work is critical to lay the groundwork for developing hourly forecast models for REV implementation. By 2020, a second staff employee (total two FTEs) will be added. The REV related tasks will include maintaining and updating the distribution areas/network and DER forecasting models, coordinating with other REV supporting staffs, and monitoring the system performance. Some incremental IT support will be added in 2019 to support the increased criticality of quick response times and to support the additional functionality.

Q. I show you a four-page document entitled, "CONSOLIDATED EDISON COMPANY OF NEW YORK, INC. – Metrix IDR Load Forecasting Upgrade – O&M" and ask whether it was prepared under your supervision and direction?

A. Yes.

MARK FOR IDENTIFICATION AS EXHIBIT ___ (ES-14)

Q. Please explain Exhibit ___ (ES-14).

A. This exhibit describes the Metrix IDR Load Forecasting Upgrade and shows the associated O&M expenses that are planned to be incurred between 2017 and 2020. The Company projects to spend approximately $100,000 per year starting in 2017, increasing to $125,000 per year in 2019, and increasing to $275,000 per year by 2020. Of this $275,000, $75,000 is for incremental Information Technology support.

Additional details associated with this O&M expense is shown in Exhibit ___ (ES-14).

TARIFF CHANGES

Q. Is the Company proposing any tariff changes?

A. Yes. With respect to the MSC II Adjustment Factor in the Market Supply Charge, the costs/benefits of hedges are defined in the current tariff to be "all costs incurred and benefits received from financial hedging instruments

associated with transactions intended to reduce price volatility to customers." The Company proposes to change the tariff to specifically provide for recovery of costs and benefits associated with physical hedges such as that the same language above in quotes would read, "all costs incurred and benefits received from hedging instruments associated with transactions intended to reduce price volatility to customers."

Q. Why is there a need to change the tariff to capture the costs and benefits of physical hedges?

A. As discussed earlier in the testimony, the Company plans to conduct annual RFPs for short-term energy and capacity that are either physical or financial hedges to mitigate the price volatility impact that may otherwise occur following the expiration of our NUG contracts. The proposed tariff change will cover transaction costs associated with physical hedges just as the current tariff covers transaction costs associated with financial hedges. These transaction costs are incurred for the benefit of customers in connection with the Company's diligent efforts to implement Commission policy to mitigate price volatility for customers and should be recoverable as a reasonable cost of doing business.

Q. Do you know of any other New York utility tariff that provides for recovery of physical hedge transaction costs?

A. Yes. The proposed tariff change herein will make the treatment of transaction costs associated with physical hedges the same as in O&R’s tariff.

Q. Does this conclude your testimony?

A. Yes.