INFRASTRUCTURE INVESTMENT PANEL

ELECTRIC

1 Q. Would the members of the Panel please state their names
2 and business addresses?
3 A. John F. Miksad, William Longhi, Victor Gonnella, John
4 Mucci, Rebecca Craft, Marc Huestis, and Nicholas
5 Colonna. The business address for Mr. Miksad, Mr.
6 Longhi, Mr. Mucci, Ms. Craft and Mr. Colonna is 4
7 Irving Place, New York, NY 10003; the business address
8 for Mr. Gonnella and Mr. Huestis is 1610 Matthews
9 Avenue, Bronx, New York.
10 Q. By whom are you employed, in what capacity, and what
11 are your backgrounds and qualifications?
12 A. (**Miksad**) We are employed by Consolidated Edison Company
13 of New York, Inc. ("Con Edison" or the "Company"). I
14 am Senior Vice President, Electric Operations. I have
15 been employed by Con Edison since 1981. From 1981 to
16 2007, I held positions of increasing responsibility
17 within the Company. During the past 27 years, I have
18 held operating positions in System and Transmission
19 Operations and Electric Operations. My operating
20 experience is as follows:
21 * Senior System Operator, System and Transmission
22 Operations

1 * Department Manager of Queens Distribution
2 Services
3 * Department Manager of the Brooklyn/Queens
4 Control Center
5 * Chief Distribution Engineer
6 * Vice President, Manhattan Electric Operations
7 In September 2005, I was elected to my current position
8 of Senior Vice President.
9 I earned a bachelors degree in Electric Engineering
10 from Manhattan College in 1981. I am a licensed
11 Professional Engineer in the State of New York.
12 **(Longhi)** I am Senior Vice President, Central
13 Operations. I have been employed by Con Edison since
14 June 1976. From 1976 to 2007, I held positions of
15 increasing responsibility within the Company. During
16 the past 32 years, I have held a variety of technical
17 and operating positions. My experience is as follows:
18 * Department Manager of Engineering - Electric
19 Operations
20 * Department Manager of Operations - Electric
21 Operations
22 * General Manager - Electric Operations

1 * Chief Distribution Engineer

2 * Vice President Electric and Gas - Orange and

3 Rockland, Inc. (a subsidiary of Consolidated Edison,

4 Inc.)

5 * Vice President - System and Transmission

6 Operations

7 * Vice President - Electric Operations

8 * Senior Vice President - Central Operations

9 In December 2006, I was elected to my current

10 position of Senior Vice President.

11 I earned a bachelors degree in Electric

12 Engineering from Cornell University in 1975. I served

13 as the Chairman of the Reliability Coordinating Council

14 ("RCC") of the Northeast Power Coordinating Council

15 ("NPCC") for two terms and I am now on the NPCC Board

16 of Directors. I was also a Chairman of the Association

17 of Edison Illuminating Companies ("AEIC")

18 Interconnection Committee and served as a member of the

19 New York State Reliability Council Executive Committee.

20 **(Gonnella)** I am Vice President, Maintenance &

21 Construction Services. I have been employed by Con

22 Edison for 40 years and have held many different

positions throughout the Company including General Manager in Construction Management (where, for six years, I was responsible for a 400 person engineering and construction organization), General Manager in Transportation and Stores, and Director in Purchasing. Prior to my election to Vice President in 2004, I was a General Manager in the Steam Business Unit and served as the Project Manager for the East River Repowering Project. I received a bachelor degree in Civil Engineering from Manhattan College in 1965. I am a registered Professional Engineer in the State of New York.

(MUCCI) I am Vice President, Engineering and Planning, Electric Operations. I have overall responsibility for Con Edison's Distribution Engineering, Energy Services and Electric Operations Planning and Analysis. I have been employed by Con Edison for approximately 40 years. I have held various positions including Vice President of Central Field Services, General Manager of Electric Operations in Brooklyn Queens, and Plant Manager of Ravenswood Station. In June 2006, I was appointed to my current position.

1 I earned a bachelor's degree in technology from the
2 State University of New York and a master's degree in
3 Business Administration from Rensselaer Polytechnic
4 Institute. I have also completed the Public Utility
5 Executive Program at the University of Michigan.
6 **(CRAFT)** I am the Director, Energy Efficiency at
7 Consolidated Edison Company of New York, Inc.,
8 responsible for the development and implementation of
9 demand side management and energy efficiency programs
10 for the Company's electric and gas systems.
11 Prior to my current position, I was Assistant to the
12 Chairman of Consolidated Edison, Inc. and worked on
13 special projects, and prepared research and briefing
14 materials for internal meetings, industry conferences
15 and other external events. Prior to becoming the
16 Chairman's assistant, I was the Director of the Energy
17 Markets Policy Group and developed Company policy
18 regarding the wholesale electric and gas markets; and
19 represented the Company before the New York Independent
20 System Operator and the Federal Energy Regulatory
21 Commission, in various stakeholder meetings and
22 industry groups.

Before joining Con Edison, I spent over 11 years at Prudential Financial in a variety of positions. I worked in International Investments, Retirement Services, and Prudential's Enterprise Planning Unit. I also served as an Assistant General Counsel for energy project financing.

I currently serve on the New York Investment Fund CleanTech Advisory Committee. I graduated with a bachelor's degree from Wellesley College and a Juris Doctor degree from Indiana University School of Law, Bloomington.

(Huestis) I am the General Manager of Substation Operations Planning. I joined Con Edison as a Management Intern in 1982. Since then, I have held various management positions of increasing responsibility in the Company, including Plant Manager at the Waterside and East River Generating Stations. I earned a Bachelor of Engineering degree from Stevens Institute of Technology in 1982 and a Master of Science degree in Mechanical Engineering from Manhattan College in 1995.

(Colonna) I am the Director for Planning and Analysis

1 responsible for coordinating the development of the
2 capital, operations and maintenance (O&M) and human
3 resources programs for Con Edison Operations. I have
4 held various positions during my 33 years with the
5 Company including: Department Manager of Planning and
6 Analysis; Systems Manager of Information Resources;
7 Senior Planning Analyst in Corporate Accounting; and
8 Financial Manager of Staten Island Electric Operations.
9 I earned a bachelor's degree in mathematics, as well as
10 a master's degree in management from Polytechnic
11 Institute of New York.
12 Q. Would you briefly describe the purpose of the Panel's
13 testimony?
14 A. The Panel will address Con Edison's Demand Side
15 Management ("DSM") program and the overall need for
16 Transmission and Distribution ("T&D") infrastructure
17 investment. We will also present the Company's planned
18 capital and operations and maintenance ("O&M")
19 expenditures during the Rate Year and the next several
20 years. Additional Capital and O&M programs are
21 discussed by other company witnesses, including the
22 Electric Production Panel (Electric Production Capital
23 and O&M) and the Public Improvement Panel (Public

Improvement Capital and O&M). We will also discuss Con Edison's efforts to mitigate the revenue requirement for its T&D programs and projects through demand reduction; capital investment reduction initiatives; project deferrals; productivity and process change; and system efficiencies. Furthermore, we will discuss the increase in the market price of transformers, cable and other equipment and its impact on our infrastructure funding requirements. In addition, we will share our views on the current incentive performance mechanisms.

Q. How will you present the Company's projected capital and O&M expenditure requirements?

A. First, we will discuss factors that are driving the overall need for infrastructure investment in Con Edison's service area. Next, we will discuss our rate mitigation initiatives including our Demand Side Management and Energy Efficiency initiatives. Finally we will discuss the Company's projected capital and O&M expenditure requirements under the following six general themes:

- **Support Economic Growth** –These are programs and projects required to meet the forecasted increase in

customer demand. This includes projects associated with generation interconnections.

- **System and Component Performance** - These are programs and projects designed to maintain and improve the reliability of the Company's transmission and distribution infrastructure both in the near and long term.
- **Public Safety and Environmental Improvements** - These are programs and projects aimed at reducing the probability of an event endangering the safety of the public or an event that adversely affects the environment.
- **Storm Hardening and Response** - These are programs and projects designed to make the Con Edison system more storm resistant, shorten the duration of storm related outages and improve communication to customers and other stakeholders during a storm event.
- **Advanced Technology** - These are programs and projects utilizing cutting-edge technology to enhance operating and engineering models of the system, in order to make timely decisions to improve

1 reliability.

2 • **Process Improvement** - These are programs and

3 projects designed to streamline processes and

4 improve efficiency.

5 Q. Please discuss the overall need for infrastructure

6 investment.

7 A. Con Edison has been a part of the economic and social

8 fabric of the New York metropolitan area since the late

9 1880s. We are proud of our integral role in the

10 history, growth and development of our service

11 territory. Con Edison distributes electricity to more

12 than 3.2 million customers in New York City and

13 Westchester County, with a combined population of over

14 nine million people. Our Company is one of the oldest

15 electric utilities with the largest underground

16 electric distribution system in the United States. The

17 electric system is comprised of approximately 94,000

18 miles of underground transmission and distribution

19 lines and over 36,000 miles of overhead transmission

20 and distribution lines. Con Edison's service

21 territory, while relatively small geographically,

22 represents approximately 40 percent of New York State's

1 peak electricity demand. Our service territory
2 includes facilities with international significance
3 such as the United Nations, and the New York Stock
4 Exchange. Because electric service reliability is
5 critical for both the economic growth of the region and
6 the health and well being of our customers, it is
7 imperative that we deliver electricity continuously, in
8 a safe and reliable manner. Electricity sustains
9 healthcare, food storage and preservation, water
10 delivery and purification, sewer, communications,
11 transportation, commerce, entertainment and the
12 conveniences of everyday life. Loss of electricity is
13 a particular concern for New York City with its
14 significant concentration of high-rise buildings,
15 extensive underground subway and rail transportation
16 systems, and major health care facilities. To maintain
17 reliable electric service, the Company must focus on
18 current, day-to-day operations, infrastructure
19 reliability needs and anticipated growth as we plan and
20 invest for the future of our service territory.
21 Q. Please briefly discuss your transmission system.
22 A. Con Edison's transmission system includes both
23 underground and overhead infrastructure. Con Edison's

1 underground transmission system is mainly comprised of
2 underground pipe-type cables. This type of cable
3 system, which comprises 85 percent of our transmission
4 system, is basically composed of a steel pipe that
5 houses three paper-insulated cables and is filled and
6 pressurized with 8.7 million gallons of a dielectric
7 fluid. Over 200 facilities, located throughout the
8 system, circulate and cool the pressurized dielectric
9 fluid. The dielectric fluid provides insulation as
10 well as cooling for the cables. The first pipe-type
11 underground transmission feeder was installed in 1947.
12 The average age of our pipe-type underground system is
13 about 42 years.
14 In addition to pipe-type cable Con Edison's
15 transmission system includes other types of cable, such
16 as self-contained fluid-filled and solid dielectric.
17 These cables represent the remaining 15 percent of the
18 total length of the underground transmission system.
19 The overhead transmission system, located in Dutchess,
20 Putnam, Westchester, and Richmond counties, consists of
21 1,212 towers which support 356 circuit miles. This
22 infrastructure is situated along 113 miles of right-of-
23 way. The Company also owns or jointly owns 393

structures which support 81 circuit miles in Orange and Rockland counties.

Con Edison's transmission system is experiencing increased capacity requirements because of economic growth in our service territory. The system is subject to high daily loading as well as to a physically challenging underground environment. Accordingly, this system must be maintained, restored and programmatically replaced, to provide a safe and reliable system for delivery of electric power to customers.

Q. Briefly discuss the Area and Transmission Substations on the Con Edison system.

A. Substations consist of components (circuit breakers, transformers, switches, relays systems and communications systems) that are used to transform, sectionalize and direct power on the electrical power system. On the Con Edison system, these substations are referred to as Switching Stations and Area Stations (or Area Substations). Currently, the Con Edison system has 38 switching stations and 58 area substations.

1 The switching stations are operated are at 345 kV, 138
2 kV, and 69 kV, and have an average age of 46 years. Of
3 the 38 switching stations, only Mott Haven and West
4 49th St. are indoor SF6 insulated stations; Dunwoodie
5 is an outdoor SF6 insulated station; and all others are
6 outdoor open air insulated stations. Typically,
7 transmission lines and generating units are
8 interconnected to these types of stations, which step
9 the voltage down by the use of transformers, to deliver
10 electric power to the area substations that are located
11 close to the end-use customers.
12 The area substations are operated at 33 kV, 27 kV and
13 13 KV, and have an average age of 36 years. With the
14 exception of some of the older stations, most of the
15 area stations are indoor facilities, except for their
16 power transformers. These substations receive power
17 from the switching stations and further step the
18 voltage down, by the use of transformers, to deliver
19 electric power to the distribution system.
20 Similarly to the transmission system, the substations
21 are experiencing increased capacity requirements
22 because of continuing economic growth in our service
23 territory. Accordingly, these facilities must be

1 maintained, restored and programmatically replaced, to
2 provide a safe and reliable system for delivery of
3 electric power to customers.
4 Q. Briefly discuss the Con Edison electric distribution
5 system.
6 A. The electric distribution system delivers energy to the
7 five boroughs of New York City and most of Westchester
8 County, serving a population of over nine million
9 people. It includes the largest low voltage
10 distributed secondary network system in the world. The
11 distribution system consists of 58 area substations
12 (soon to be 60 area substations with the addition of
13 Parkview and Rockview in 2008) which supply 76
14 secondary networks and load areas (78 with the addition
15 of Parkview (Triboro network) and Rockview). Our
16 underground distribution system includes approximately:
17 262,700 manholes and service boxes; 23,700 conduit
18 miles of duct; 94,000 miles of underground cable; and
19 25,500 underground network transformers that further
20 step the voltage down from 33 kV, 27 kV or 13 KV to
21 120/208 volts to supply the low voltage secondary
22 distribution system. The average age of the
23 underground system is as follows: primary cables - 24.6

years; secondary cables - 37.2 years; and transformers - 20.8 years.

Q. Please continue.

A. Our overhead distribution system is comprised of 4kV, 13kV, 27kV and 33kV feeders. It includes 142 - 4kV, 13kV, and 27kV autoloops; 258 unit substation transformers; approximately 205,000 poles; about 46,650 overhead transformers; and approximately 33,300 miles of overhead wires. The average age of our overhead distribution system is about 40 years.

Q. Please continue.

A. Our distribution system operates on various primary voltages: 4kV, 13kV, and 33kV in Staten Island; 4kV and 27kV in Brooklyn and Queens; 4kV and 13kV in the Bronx and Westchester; and 13kV in Manhattan. There are approximately 2,100 primary voltage distribution feeders supplying network and non-network load. Our network system is second-contingency design (i.e., it is designed to sustain the loss of any two feeders under peak design conditions without any feeder or transformer overloads or adverse impact on service to customers), while the non-network system is first-contingency design.

1 Q. Please continue.

2 A. Similar to Con Edison's transmission and substations
3 systems, our distribution system is also experiencing
4 load growth as a result of the overall economic growth
5 in our service territory. Because the distribution
6 system is a vital component of our energy delivery
7 system, it must be expanded, maintained and renovated
8 in order to provide safe, reliable electric service to
9 our customers.

10 Q. Have you explored opportunities that would defer the
11 need for infrastructure investment thereby limiting the
12 level of funding requested in this rate filing?

13 A. Yes, we have classified them into five general
14 categories: demand reduction; project deferrals;
15 capital investment reduction initiatives; system
16 efficiencies; and productivity and process change. We
17 will discuss the Company's efforts in each area
18 beginning with a discussion of the Company's Demand
19 Reduction and Energy Efficiency programs.

20 Q. Please continue.

21 A. **Demand Reduction** - We seek to moderate the area's
22 continuing demand for electricity through energy

efficiency programs and energy conservation initiatives. This approach reduces energy consumption, postpones specific infrastructure investment, and reduces CO_2 emissions. It is also expected to significantly reduce the wholesale electric energy and capacity market prices to the benefit of customers in our service territory. As a steward for the environment, Con Edison has long championed energy conservation and efficiency programs. Our "Enlightened Energy" program, launched in the late 1980's, realized a saving of approximately 740 MW.

We continue today with our Demand Side Management initiatives implementing rigorous measurement and verification protocols in our Targeted Energy Efficiency program. Based on our 10-year Load Forecast, we identified potential DSM target areas for opportunities to defer investment, including a switching station in Manhattan and another in Queens. Additional investment deferrals are discussed later in testimony. Demand reductions from our proposed program for at least 500 MW of permanent demand reductions (hereafter referred to as the "500 Mw DSM Program") are included in our forecasting and system planning,

1 resulting in deferral of over $1 billion that would
2 otherwise have been included in the Company's five-year
3 capital budget. Later in our testimony we will speak
4 in more detail regarding Con Edison's program to
5 address the demands of load growth through energy
6 efficiency or programs to manage customers' electric
7 demands.
8 Another benefit of our energy efficiency initiatives is
9 the reduction of our carbon footprint. Con Edison is
10 partnering with stakeholders in both the public and
11 private sectors. We are working toward accomplishing
12 the objectives outlined in Mayor Bloomberg's *PlaNYC*
13 2030, an effort to reduce carbon emissions by 30% by
14 the year 2030. We support the "15 by 15" clean energy
15 strategy for New York and are work to realize this
16 vision.
17 In the State's Energy Efficiency Portfolio Standard
18 Proceeding (EEPS) proceeding (Case 07-E-0548), we have
19 filed an energy efficiency plan to have installed, by
20 2015, at least 378 MW of permanent, non-targeted energy
21 efficiency and are forecasting to have installed an
22 additional 138 MW through our Targeted DSM program,

1 which we propose to continue in this rate filing. In
2 addition to the MW reductions, our plan would lead to
3 an energy reduction of approximately 7 million MWh,
4 which in turn will result in a substantial reduction in
5 greenhouse gas emissions. We also proposed, in the
6 EEPS proceeding, a strategic partnership with New York
7 City and other parties, to address the delivery of
8 energy efficiency in the City, which could be applied
9 to the balance of our service territory.
10 Con Edison is also incorporating in its everyday
11 business new concepts and green technology. For
12 example, we are installing a "Green Roof" at our
13 Learning Center facility, and we are incorporating
14 hybrid vehicles into our passenger fleet.
15 In this rate filing, the Company continues to seek to
16 balance our service territory's continuing growth in
17 demand for electricity with the Targeted DSM programs
18 that we propose here and the general non-targeted
19 demand reduction programs that we proposed in the EEPS.
20 These DSM programs will reduce wholesale energy prices,
21 defer the need for certain infrastructure investment,
22 help protect the environment, and contribute to the

15x15 and PlaNYC goals.

Q. Please explain how the Company developed the demand reduction amounts that it incorporated into its planning process for the purpose of deferring T&D investment.

A. The Company's five-year capital budget is based upon a forecast that incorporates permanent demand reductions of 647 MW through 2017, which will defer over $1 billion of capital investments that would otherwise have been part of the budget. The Company incorporated this forecasted amount of permanent demand reduction into its 2007 10-year peak load forecast after the summer of 2007 (2007 Forecast). The Company then used the 2007 Forecast to develop the 10-year load relief plan that was in turn used to develop the Company's capital budget. The Company is comfortable in relying on its forecasted amount of permanent demand reduction because it has confidence in the rigorous measurement and verification (M&V) that it implements for its Targeted DSM program and proposes to use the same M&V for its non-targeted programs.

Q. Have you finished your discussion of the Company's plans for utilizing Demand Reduction and Energy Efficiency Programs to defer the need for infrastructure investments?

A. Yes, we have. We will now discuss the effect, to date, of our energy efficiency programs on our capital forecast and other actions that the Company has taken to defer the need for infrastructure investment, thereby limiting the level of funding requested in this rate filing. In addition to project deferrals resulting from demand reduction, our actions to mitigate customer impacts include capital investment reduction initiatives; system efficiencies; and productivity and process change.

Q. Please continue

Project Deferrals - As will be discussed further below, based on our DSM initiatives we have deferred seven new substations (Gateway Park, Idlewild, Hudson Yards, Nevins Street, Hillside, Gowanus, and Queens) and the installation of two major feeders connecting the Bronx (Mott Haven Substation) to Queens (Queens Substation) and to Brooklyn (Gowanus Substation). The impact of these DSM deferrals is a deferral of approximately $1.2

1 billion in capital expenditures, which is reflected in
2 our 2008 - 2012 Capital Forecast.
3 **Capital Investment Reduction Initiatives** -Another Con
4 Edison initiative is seeking to define and develop the
5 next generation electric transmission and delivery
6 system that will meet out customers' needs 20, 30, or
7 even 50 years from now. A dedicated project team is
8 discussing energy delivery challenges with industry
9 groups and key equipment manufacturers, and
10 benchmarking new technologies and best practices from
11 around the world. The "3G (Third Generation) System of
12 the Future" project includes international benchmarking
13 of other electric utilities around the world serving
14 dense urban centers, including Tokyo, Paris, London,
15 Sydney, Hong Kong, Shanghai, and Chicago. Such
16 technologies have the potential to mitigate costs while
17 maintaining reliability through asset sharing
18 technologies and alleviation of the congestion of
19 underground facilities beneath the streets. A near-term
20 application of asset sharing is the York area
21 substation on the Upper East Side of Manhattan. The 3G
22 asset sharing design for York connects two transformers

from East 75th Street substation to York substation via two underground cable inter-ties. By sharing the two transformers between the two substations, York can be established with fewer transformers than the standard design, while still serving the same demand and maintaining reliability. The superconductor and fault current limiter advanced technologies being used to connect these stations are discussed further in testimony.

System Efficiencies - This supply component to permit additional economic imports into our system includes:

Dynamic Feeder Rating (DFR) - DFR provides feeder ratings in real time, taking advantage of actual ambient conditions and loading to more accurately calculate the feeder loading capability. This program has served to improve both normal and contingency capabilities on our transmission system and, in doing so, has improved both reliability and economic flows into our system.

179th Street Substation Reinforcement - M-29 Feeder - The purpose of this project is to install a new 345 kV feeder from the Sprain Brook 345 kV Substation to the

Sherman Creek Switching Station via the new Academy 345kV Switching Station. This increased transfer capacity would allow approximately 350 MW of additional economic imports from upstate New York to New York City, resulting in lower energy prices for consumers in New York City.

Replacement of Gowanus Breaker 14 - The circuit breaker replacement allows the operation of the system during peak load periods with two series reactors out of service without exceeding short circuit duties. With these reactors out of service, system losses are reduced and voltage performance of the system is improved. This improvement in voltage allows the opportunity for increased economic imports from upstate New York resources to supply New York City customers at a lower energy price.

Productivity and Process Change - Our testimony on Advanced Technology and Process Improvement will detail the initiatives we have targeted in our 2008 - 2012 Capital program which we believe contribute to the overall rate mitigation reflected in this rate filing. Key programs include:

1 Superconductivity at York substation - Con Edison
2 continues to evaluate ways to make better use of
3 existing assets and possibly reduce the amount of
4 future equipment that may be needed, without
5 compromising the high levels of service
6 reliability that New York needs. For example, we
7 are planning an R&D project that will utilize
8 superconducting cable at the York area substation
9 (service date 2011). Chilling special cables to
10 very low temperatures permits more power to be
11 carried in a smaller space.
12 Projects under the System Operations Enhancements
13 program will improve operating efficiency by
14 eliminating routine handoffs and lessening
15 opportunity for an operating error, while also
16 reducing feeder restoration time.
17 Work Management Project Tracking - The Company
18 will implement a comprehensive work management
19 system that tracks work and time spent into a
20 common, corporate-wide platform. This will
21 provide an environment where users can budget,
22 plan, acquire, schedule and track use of
23 resources. By organizing processes around one

common platform, obsolete technologies will be eliminated.

Electric Operations Process Management - The goal of the Edison Project is to apply lean management, adaptive intelligent machine learning systems with user friendly interfaces to improve our business efficiency and transform our business processes. For example, the Company is using machine learning technology to develop an application to evaluate and optimize various network improvement options.

Q. Are there any other approaches applied to reduce the level of funding requested?

A. Yes. Project Prioritization is a tool to assist us with evaluating the relative benefit that each proposed project would provide based on several key factors including: operational needs, risk, value, and interdependencies. The specific attributes used for the prioritization process incorporate Con Edison's mission and goals. These attributes were developed by incorporating current industry practices and by updating prior Company project ranking processes. An initial determination of non-discretionary (mandatory)

1 projects that are driven by regulatory requirements,
2 public law, environmental or safety, demand relief, and
3 generation interconnections is made, and these projects
4 are assigned the highest priorities. After reviewing
5 and discussing the rationale for prioritization,
6 including costs and benefits of the various projects, a
7 final set of capital projects is presented to the CEO
8 and CFO for their final review, as described in greater
9 detail in the testimony of Con Edison's President,
10 Louis Rana. The final budget is then presented to the
11 Board of Trustees. The Board also receives an overview
12 of the five year plan.
13 Q. Other than deferral of infrastructure investments as a
14 result of DSM initiatives previously discussed, can you
15 provide some examples of non-mandatory projects or
16 programs that have been deferred or reduced in scope to
17 mitigate rate impacts on customers?
18 A. Yes. In the Company's proposed capital expenditures
19 over the next three years, the following projects or
20 programs were either deferred or reduced in scope after
21 further analysis:

- Substation transformer replacement program - We reduced the number of unit replacements from 10 units per year to 3 units per year ($50 million/yr). With the current population of 150 large power transformers greater than 40 years old, the Company would need to replace 10 transformers per year to replace these oldest units over a 15 year period to proactively address transformer life cycle aging issues, but the cost would be approximately $60-70 million per year. Consequently, the Company is limiting the program to replacement of 2 to 3 units per year, at a cost of $13 million in 2009, in order to mitigate the rate request in this filing while maintaining system reliability.
- Circuit switchers - We reduced the number of unit replacements from four per year to one per year ($1.5 million/yr). To proactively address aging and obsolescence of the population of 142 circuit switchers on the system, replacement of three to four circuit switchers per year at a cost of about $2 million per year would be required. In order to mitigate the rate request in this filing, we are

limiting the program to one replacement per year targeting obsolete circuit switchers with high voltage ratings.

- Dielectric Fluid Pump Houses - We reduced the number of unit replacements from 8 units per year to 4 units per year ($6 million/yr). We have funded the replacement of three to four pump houses per year. However, at that replacement rate, the current population of 92 pump houses that are already 30 - 40 years old would not be replaced for 25 to 30 years. Additional funding of approximately $6 million per year would be needed to replace an additional 3-4 pump houses per year
- Substation DC Test Sets - We reduced the number of test sets replacements from 5 sets per year to 3 sets per year ($0.8 million). The current population of DC test sets used to process distribution feeders is approximately 100. We have funded the replacement of three test sets per year, but replacement of five additional test sets per year at a cost of $0.8 million would be needed to proactively address life cycle aging issues. At the

current funding level, test sets will have to be kept in service well beyond their useful service life.

- Overhead System Switches - We deferred the replacement of another 90 switches ($6 million).
- Costal Storm - We extended the program from a 10-year program to a 20-year program, which reduced the number of submersible transformer vault replacements from 25 to 7. ($3 million/annually).
- 138 kV Feeder Dielectric Fluid Leak Detection System - We deferred installation of a monitoring system on a pair of 138-kV feeders ($1.3 million).
- Distribution Feeders- We deferred a portion of the installation of new river crossings at the 59th Bridge and Riverdale/Flushing locations ($2 million).
- Rear Lot Pole Elimination - We are extending the length of the program to relocate poles and overhead equipment currently located in customers' backyards ($3 million).

- Strategic Technology projects - We reduced the scope of several planned IT/technology improvement projects ($2 million/yr).
- East River Substation 13-kV Bus Enclosure - We deferred upgrades to the enclosure ($1 million/yr).
- Facilities Betterment - Deferred various projects ($0.9 million).

Q. Have any Feeder Replacement, Upgrade, and Installation projects been extended to mitigate the rate impacts on customers?

A. Yes. Such projects include:

-- Replacement of 69kV feeders on the Queensboro bridge has been further deferred to 2010 ($22 million).

-- Upgrade of feeder 38R51/52 has been further deferred to 2011 ($2.7 million).

-- Replacement of feeder 69M43 with 38M53 has been further deferred to 2009 ($9 million).

-- Replacement of feeders 34051/34052 has been further deferred to 2014 ($12 million).

-- Replacement of feeders 34182/34184 has been further deferred to 2012 ($26 million).

-- Replacement of feeders 69M41/45 has been further deferred from 2009 to 2011 ($6 million).

-- Installation of Feeder M53 has been deferred due to DSM initiatives from 2008 to 2016 ($65 million).

Q. Has the Company taken any other actions to mitigate the rate impacts on customers of its capital and O&M programs?

A. Yes, we will discuss below some of the on-going initiatives and processes that have helped us to reduce the projected spending in the past on several projects. Con Edison employs a Bid Check Estimating Section, reporting to the Planning and Analysis department that provides accurate, competitive construction cost estimates, analysis and advice to insure the best value for our customers. The core functions and the process of the Section are as follows:

- Provide an independent fact-based cost estimate for competitive construction bids. This estimate is confidential until it is used by the Company to

check the validity of the Contractor's bids. If the lowest qualified bidder is not in-line with the Company's Bid Check Estimate, a fact-finding process is conducted. This process often results in the Contractors reducing their bids, clarifications to eliminate contract scope ambiguities or re-bidding.

- The same process of providing an independent Bid Check Estimate continues after the award of the contract. These estimates are used to check on changes to the scope of work during construction until the close-out of the project.

The Bid Check Estimating Section works closely with all other departments involved with the construction projects, such as Purchasing, Construction, Engineering and User Organization, to obtain the best value for our customers. This team effort has resulted in tangible cost avoidances of $115 million since 2003. Some examples of the process in action are:

- A new 138KV & 345KV Sub-Station in the Bronx (Mott-Haven) was required to mitigate the overload condition in the South Bronx and promote reliability. This was a critical fast- tracked project and the contractor's

1 bids reflected very high cost due to risk. A number of
2 fact-finding meetings were held, which resulted in a
3 decision to re-bid with scope clarifications and
4 additions, and allowing more time to obtain sub-
5 contractor quotes. The re-bid reduced the cost from
6 $55.9 million to $53.1 million with additional scope
7 included, thereby avoiding $2.8 million.

8 • To accelerate the construction schedule for the Newtown
9 substation in Queens, the on-site demolition contractor
10 that had the required permits in place to continue
11 needed excavation work for the project was given an
12 opportunity to summit a price for the excavation. When
13 the Contractor submitted a high price of $1.7 million,
14 we did not accept this even though the schedule was
15 imperative to the project. We had an intense fact
16 finding and negotiating meeting that resulted in the
17 contractor correcting his inflated quantities,
18 productivity and labor rates, thereby avoiding $452,000
19 and maintaining the schedule advantage.

20 • The Con Edison Vegetation Management Program, also
21 known as the tree trimming or line clearance program,
22 was significantly revised at the conclusion of 2006 for

1 the Westchester County service area. As a result of the
2 impact trees were having on the electric distribution
3 facilities during the major storms of 2006, the Company
4 recognized enhancements were required to protect the
5 electric facilities and reduce tree related damage in
6 Westchester County. At the beginning of 2007, Con
7 Edison implemented an enhanced line clearance program,
8 which increased horizontal clearances by 66% and
9 vertical clearances by 50% in Westchester County and
10 promoted tree and brush removal and the application of
11 growth retardant stump treatment. This significant
12 change was bid for the first time and the low bid was
13 approximately $10 million which was significantly
14 higher than the bid check estimate and the budget. A
15 number of fact finding meetings were held, which
16 resulted in reorganizing some pay items, re-bidding and
17 negotiating. This resulted in a low bid of
18 approximately $6 million, thereby avoiding $4 million
19 and maintaining the same high amount and quality of
20 work.
21 Q. Are there approaches the Commission can take to reduce
22 the Company's costs in connecting new customers to the

electric system or meeting new electric demands of such customers?

A. Utilities generally are required by law to serve all customers on a non-discriminatory basis. The duty to serve is embodied in laws that generally require utilities to extend the utility system to the customer's premises without cost up to a limit based on distance. Short of changing these basic legal requirements, the Commission can re-examine its own regulations to shift costs from the Company (and the general body of utility customers) to new customers.

Q. Please give an example of what the Commission could consider along these lines.

A. One approach would address the cost of connecting a new customer to the existing distribution system. The Company follows the Commission's rules for new service, which require the utility to provide a certain amount of facilities without cost. The Commission's reduction or qualification of free service allowances through revisions of its regulations could shift to applicants for service some or all of the cost of such facilities. A variation of this approach would involve the Commission's direction that utilities require

compliance with additional energy efficiency standards as a condition to be met in the construction of new or the renovation of existing buildings by applicants for service. The tariff already includes a requirement that buildings meet the State Energy Conservation Construction Code; however, a higher standard of efficiency could be imposed in consideration of more favorable treatment on line extension costs. Assuming that additional standards would reduce potential building demands, the utility could build smaller connections, at lower cost, to meet building loads.

Q. Are there other approaches open to the Commission in assigning costs to customers?

A. Another approach would take a somewhat broader view and examine the allocation of system costs incurred to serve very large projects. For instance, a development project may impose new loads in an area where the Company does not have adequate substation capacity. The Company's tariff currently obligates it to provide service to a "building or premises." Where the premises will be subdivided and the resulting lots developed in a manner that would allow separate ownership, the Company generally considers the lots as

1 eligible for separate service. If the Commission were
2 to direct that utility tariffs be revised to provide
3 that "premises" be considered the single pre-
4 subdivision premises, the Company could require that
5 the developer of a project take service for the entire
6 premises at a single point at the highest voltage
7 available with the lowest cost to the Company. The
8 developer would then have to incur the costs of
9 distributing the service within the premises. This
10 could lead to the customer, as a matter of economics,
11 to develop or construct its own substation or paying
12 the Company to provide service at standard voltage,
13 through a contribution to the cost of the required
14 substation. A potential offset to a customer that
15 assumes responsibility for building its own substation
16 could be the establishment of a methodology for sharing
17 these costs between the developer and the Company in
18 recognition of any reliability benefits the Company
19 may derive from the construction of a new substation in
20 that area.
21 Q. Please explain the potential adverse impacts of the
22 alternative approaches mentioned above.

1 A. The Commission's rules respecting utility service
2 connections are complex and were developed over many
3 years. Changes to these rules would likely create
4 significant uncertainty in this area, which could be a
5 source of misunderstanding for developers and
6 individual customers. In addition, proposals to lessen
7 the amount of facilities provided without charge for
8 new load are generally met with arguments that fair and
9 balanced service connection rules are important for the
10 service area's continued economic growth.
11 Q. Is economic growth a legitimate regulatory goal?
12 A. Yes, it is an important goal. It is worth noting that,
13 in adopting a revenue decoupling mechanism for the
14 Company in the recent 2008 Electric Rate Order, the
15 Commission did not adopt the revenue per customer
16 mechanism designed by the Company that was intended to
17 provide the Company with an incentive to encourage
18 economic development. We believe economic development
19 is important and that the Company has an important role
20 in advocating economic development in its service area
21 that benefits all customers. We further believe that
22 efforts should be made to embody an important

1 regulatory goal like economic development into the
2 regulatory framework.
3 Q. Are you recommending changes to the service connection
4 rules at this time?
5 A. No. Proposals to relate service connection rules to
6 compliance with, or enhancements to, energy efficiency
7 are likely to pose administrative challenges and
8 questions of fairness. Therefore, while we are not
9 recommending revisions to the Company's service
10 tariffs, it is appropriate to raise the issue because
11 revisions along the lines we mention would tend, all
12 else being equal, to lower over time the Company's and
13 customers' costs and reflect the Commission's view that
14 the Company should consider ways to reduce costs it
15 incurs to serve customers.
16 Q. Are you proposing to change the framework for economic
17 development?
18 A. We believe economic development is an important goal
19 and that regulation should align the Company's
20 interests in economic growth with that important public
21 policy. So we would welcome the opportunity to discuss
22 approaches to achieving that alignment.
23

SUPPORT ECONOMIC GROWTH

Q. Was the 5-page exhibit, entitled, "Ten-Year Peak Load Forecast" prepared under your direction?

A. Yes, it was.

MARK FOR IDENTIFICATION AS EXHIBIT __ (IIP-1)

Q. Please describe the load growth and electric demand forecasts for Con Edison's service territory.

A. Total electric demand in Con Edison's service territory is expected to grow at approximately 1.2 percent per year over the next five years. This growth includes the impact of Con Edison's permanent DSM programs (647MW) described earlier in our testimony.

Construction in both commercial and residential neighborhoods throughout the region continues to significantly affect load growth projections. In 2007, there were approximately 3.45 million households in New York City and Westchester combined. The current forecasted compound annual growth rate for new housing in the area for 2007 - 2017 is 0.5 percent, which corresponds to an increase of approximately 170,000 households by 2017.

Representatives from the Company participate in the

1 planning process for all major property developments in
2 our area. We work with developers to determine the
3 most efficient and cost effective means to reinforce
4 the electric system to meet their energy service needs.
5 Examples of such projects include: the development of
6 downtown Brooklyn, including the Atlantic Yards and the
7 Brooklyn Bridge Piers; the Westside Development in
8 Manhattan; the new Yankee and Met stadiums; the
9 continued redevelopment of lower Manhattan; major
10 residential developments, such as Trump Loft's at
11 Renaissance Square in Westchester; the continued
12 development of Greenpoint/Williamsburg in Brooklyn; and
13 a number of projects by Forest City Ratner Associates,
14 Muss Development, and Silverstein Properties. In
15 addition, large transportation and municipal projects
16 currently underway require expansion of Con Edison's
17 distribution system to meet the increased energy needs,
18 such as, the Long Island Railroad Eastside Access to
19 Grand Central Station, the extension of the No. 7
20 Subway line, the Second Avenue Subway project, the
21 Tallman Island water pollution control plant in Queens,
22 the Newtown Creek water pollution control plant in
23 Brooklyn, and the Croton Water Filtration Plant in the

1 Bronx.

2 Q. Please describe what is shown on page 1 of Exhibit __

3 (IIP-1).

4 A. Page 1 of Exhibit__ (IIP-1) shows the comparison

5 between 2007 System Forecast and the 2007 System

6 Forecast less the peak demand reductions projected as a

7 result of energy efficiency's and DSM initiatives. The

8 upper line represents the Con Edison service area peak

9 demand forecast for the years 2008 through 2017 without

10 the impact of the Company's DSM programs. The five-year

11 average annual growth rate (from 2007-2012) of this

12 forecast is 1.6%, and the ten-year average annual

13 growth rate (from 2007-2017) is 1.4%.

14 The lower line represents the service area peak demand

15 forecast including the impact of the 647 MW of

16 permanent demand reductions projected by the Company,

17 as previously discussed. The five-year average annual

18 growth rate (from 2007-2012) is 1.2% and the ten-year

19 average annual growth rate (from 2007-2017) is 1.0%.

20 Q. Please describe what is shown on pages 2 and 3 of

21 Exhibit __ (IIP-1).

22 A. In many areas, Con Edison has already transferred

23 network load, to the extent feasible, to maximize the

1 utilization of the area substations' capacities. Thus,
2 these areas will require the addition of substations to
3 reliably supply additional load growth. Page 2 and page
4 3 of Exhibit __ (IIP-1) show the changing margin in
5 loading for In-City and Westchester area substations
6 based on the Company's load forecast. The maps reflect
7 the Con Edison 500 MW DSM program as it was
8 incorporated into the Company's 2007 Load Forecast,
9 which projected 647 MW of incremental permanent demand
10 reductions by 2017 (described earlier in our
11 testimony). The maps on the left show the projected
12 loadings of New York City and Westchester area
13 substations in summer 2017 without implementation of
14 substation load relief beyond 2008. As can be seen,
15 most of area substations will exceed their
16 capabilities. The maps on the right show the projected
17 loadings of area substations in summer 2017 with the
18 completion of the Company's current substation load
19 relief construction planned for the next ten years,
20 including those measures reflected in the Company's
21 rate year revenue requirement in this case. All of the
22 area substations will be within their design
23 capabilities.

As noted above, permanent energy efficiency measures will postpone, and can permanently reduce, the need for additional electric generation and delivery infrastructure. While difficult to quantify, reducing demand will also result in lower wholesale market energy prices that benefit all customers in our service area. Additionally, customers participating in selected programs will benefit directly through energy cost reductions. Moreover, to the extent that permanent DSM resources substitute for generation, they will reduce fossil-fuel generation emissions, such as CO2, which contribute to global warming, nitrous oxides, and poor air quality.

The forecasted savings in transmission and distribution (T&D) expenditures assumes implementation of 647 MW of permanent demand reduction programs by 2017, including targeted and non-targeted programs. Should these programs not be implemented, capital requirements for T&D would need to increase significantly. Reductions in forecasted expenditures of about $1.2 billion are a result of the deferral of several major projects due to DSM, as identified in the Company's Area Substation and

Subtransmission Feeder Ten-Year Load Relief Program, which was issued on February 21, 2008.

These projects include:

Table: Deferral of Major Projects Due to DSM

Projects	Forecast w/o DSM	Forecast w DSM	Impact on 2008-2012 Capital
Gateway Park Area Substation	2015	2017	$113
Idlewild Area Substation	2016	2023	$72
Hudson Yards Area Substation	2014	2017	$6
Nevins Street Area Substation	2016	2019	$5
Hillside Area Substation	2015	2032	$3
Gowanus Switching Substation	2014	2016	$190
Queens Switching Substation	2014	2022	$165
Gowanus / Queens / Mott Haven Feeders	2014	2022	$540
Land for future substations			$150

Total $1.2 Billion

While energy efficiency programs play key roles in deferring new infrastructure investment, these efforts alone will not always be sufficient to meet anticipated load requirements. In some circumstances, we continue to accelerate some existing substation enhancement work to support the deferral of new substations. For example, in response to the deferral of the new Queens Switching Station from 2014 to 2022, the Corona Bank 10 new installation (breakers and transformer) was accelerated to increase the Corona No. 1 capability to 503 MW; work was added (additional Corona 138 kV breakers); and distribution load transfers have been increased.

Q. Please continue.

A. Exhibit__ (IIP-1), page 6, shows the effect of completion of 6 new substations during our five year plan (2008-2012), as well as the deferral of four previously planned new substations to the period 2016 - 2017.

Q. What is the Company's proposal on T&D Capital spending?

A. Page 7 of Exhibit__ (IIP-1) depicts our T&D capital spending from 2004 and forecasted forward to 2012. It reflects the anticipated increased capital

1 infrastructure spending both in the near and long term
2 to support projected load growth throughout the service
3 territory, as well as to upgrade and modernize our
4 infrastructure to maintain reliability and safety. This
5 is a continuation of the upgrade plan presented and
6 approved in the Company's previous case.
7 Q. I show you a document entitled, "CONSOLIDATED EDISON
8 COMPANY OF NEW YORK INC. - SUBSTATION OPERATIONS
9 CAPITAL PROJECTS" and ask whether that document was
10 prepared under your direction?
11 A. Yes, it was.
12 MARK FOR IDENTIFICATION AS EXHIBIT __ (IIP-2)
13 Q. What does Exhibit __ (IIP-2) show?
14 A. Exhibit __ (IIP-2) shows the capital funding
15 requirements for Substation Operations (Switching and
16 Area Substations) for the years 2009, 2010, and 2011 as
17 well as the Company's current five-year capital program
18 for Substation Operations (Switching and Area
19 Substations)for the period 2008 through 2012, including
20 lists of the planned programs and projects and their
21 associated estimated costs. These programs and projects
22 are presented in the following categories: 1) Support
23 Economic Growth; 2) System and Component Performance;

3) Environmental; and 4) Security.

Our testimony will discuss the specific programs and projects in each of these categories. We have also prepared an exhibit for each category that contains "white papers" that provide more detailed information about each of the programs and projects in that category, including work description, project justification, estimated completion date, current status, and forecasted funding. We will identify these "white paper" exhibits as we discuss each category.

Q. Please briefly describe the planning process for maintaining adequate substation capacity and supply to network customers.

A. A substation cannot supply more electricity to its networks than the capacity of its transformers and/or its supply feeders. When the electric demand from customers in a network begins to approach the design capacity of the substation supplying that network, Con Edison follows a least cost evaluation process to ensure adequate service to its customers. The first step is evaluating the best approach to meet the demand requirements utilizing the least cost option. The best approach at least cost may include one, or a

combination of, the following activities: maximizing the substation's design capacity by installing additional equipment, such as transformers, transformer cooling, and static capacitor banks; targeting Energy Efficiency Programs and exploring potential Demand Side Management initiatives in the area; reducing the size of the distribution network by transferring some of the network load to a nearby substation with spare capacity; and as a last resort, building a new substation and transferring a portion of the load to the new substation.

Q. Please continue.

A. An order-of-magnitude estimate, or feasibility estimate, is used for proposed project evaluation, comparison of alternate schemes, and for annual budget requests. Following project prioritization and approval of the budget, a detailed appropriation estimate is prepared based on a detailed approved engineering scope of work.

For large capital projects, such as installation of a new substation, operating organizations assign a project manager to oversee all phases of a project. The project manager facilitates formation of a multi-

1 discipline project team that includes a project
2 engineer and a construction manager. The engineering
3 team is led by a project engineer and includes
4 representation from appropriate technical disciplines.
5 The engineering process completes site selection,
6 demolition, site remediation, equipment specification,
7 environmental and safety hazards, above and below-grade
8 design for construction, permit requirements, and
9 testing procedures.
10 The project manager facilitates assignment of a
11 construction manager to review design-constructability
12 and manage the construction phase of the project. The
13 project manager ensures that a project schedule and
14 estimate are developed and that appropriate concurrence
15 is obtained. In addition, the project manager ensures
16 that work orders for identified work groups are
17 established, that the detailed project schedule is
18 approved, issued, and maintained current, that the
19 current working estimate for the project is initiated
20 and maintained throughout the project and that the
21 project appropriation is approved. The project manager
22 coordinates in-service requirements and work sequence
23 for physical electrical/mechanical tie-in to the

existing systems, plant modifications, system outages, and system restoration.

The project manager and construction manager will make decisions on the utilization of Company labor or contract labor during the performance of a project. Some of the considerations include the availability of skills required for the task, costs based on previous history, efficiency to perform the specified tasks, length of the program or project, frequency of type of work or task and if it is part of the Company's core business.

For projects involving contracted forces, a construction manager from the Construction organization is assigned and is responsible for the implementation of project construction. The construction manager prepares and issues purchase requisitions, identifies any special conditions for bidding, coordinates with the Purchasing department representatives on the type of contract to be obtained and selection of bidders for the work required. The project and construction manager integrate individual contractor schedules into the overall project schedule. The construction manager directs a workforce of trained inspectors that ensure

1 the construction contractors meet the requirements of
2 any contract, including technical specifications and
3 procedures and the health and safety plan for the
4 project.
5 The construction manager manages the daily performance
6 of the contractors and monitors of their activities and
7 job progress. The inspectors conduct periodic
8 evaluations of the contractor's overall performance and
9 provide this feedback to the Purchasing Department.
10 These evaluations are used to develop a history of
11 contractor performance and are utilized to determine
12 contractor bid multipliers for future procurements. The
13 construction manager monitors any deficiencies in the
14 contractor's performance and takes the necessary
15 corrective actions to resolve any performance issues.
16 For smaller scale capital and O&M programs, engineering
17 discipline engineers assume responsibility for the
18 project engineering functions. Experienced operating
19 organization personnel including planners act as
20 project managers and operating area managers or
21 supervisors fill the construction manager role. If
22 contractor labor is required, construction will also

1 assign a construction manager to provide oversight for
2 the contract management.
3 Q. What measures does the Company apply to implement these
4 projects at a reasonable cost?
5 A. The Company's processes include several controls for
6 the efficient and cost effective implementation of the
7 capital projects. For example, the scope of each
8 project is defined, and when applicable, alternatives
9 are evaluated to develop the most cost effective
10 solution. Wherever possible, the Company uses in-house
11 engineering and construction resources depending on
12 availability and technical specialty. In general,
13 outside services and equipment are purchased using a
14 formal bidding process. A bid package that includes
15 technical specification or scope of work is prepared
16 and proposals are solicited from pre-qualified vendors.
17 Each proposal is evaluated for compliance with the
18 Company's technical and commercial requirements as
19 specified in the bid documents and the lowest-cost
20 qualified vendor is selected. Additional controls are
21 imposed for construction contracts to obtain the lowest
22 possible cost. For example, proposals for fixed-price
23 contracts are typically requested and a separate sealed

"bid check" cost estimate is prepared for contracts above a certain amount, which is used for comparison with the contractors' bids. Construction management oversees the construction contractors to ensure the terms of the contracts are met. Contract change orders are minimized but, when needed due to unforeseen conditions, they are evaluated and require management approvals. During construction, periodic current work estimates are prepared to assess the project's progress as compared with the approved budget.

Support Economic Growth
Substations Operations Capital Programs

Q. Please describe the major substation capital expansion programs planned by the Company shown under the section "Support Economic Growth" in Exhibit __ (IIP-2).

A. To meet the forecast increase in demand, additional substation capacity is required throughout the five boroughs and Westchester County. We will discuss the projects required to expand substation capacity in each area.

The white paper exhibit describing these Substation Operations capital and O&M projects that support

1 economic growth is titled "Substation Operations -
2 Support Economic Growth." The capital programs are
3 described on pages 2 through 17 of the exhibit.
4 MARK FOR IDENTIFICATION AS EXHIBIT __ (IIP-10)
5 Q. Please continue with your description of the major
6 substation capital expansion programs planned by the
7 Company shown under the section "Support Economic
8 Growth" in Exhibit __ (IIP-2).
9 A. We will address the projects by area:
10 **Manhattan**
11 Based on the current 2008 - 2017 Area Substation and
12 Subtransmission Feeder Ten-Year Demand Growth Program
13 ("Ten-Year Demand Growth Forecast"), the demand in the
14 east and west sides of Manhattan will exceed local area
15 substation supply. The following key projects are part
16 of our energy strategy to meet the future demand.
17 **East Side**
18 **York Area Substation:**
19 Based on the current Ten-Year Demand Growth Forecast,
20 demand in the upper east side of Manhattan will exceed
21 local area substation supply beginning in 2011. The
22 continuing demand growth in both the East 63rd Street

No. 1 and East 75th Street Area Substations dictate the need for a new area substation in this area of Manhattan before the summer of 2011. All nearby substations are at or close to capacity, and the only alternative is the establishment of a new substation. To meet the projected demands, the Company plans to construct a new area substation, which will be supplied from the recently constructed Mott Haven Switching Station.

Coined "a station within a station," this new substation is to be built in the existing East 74th Street generating station in space that is being made available by the removal of the retired turbine generator set. Upon establishment of the York Area Substation, load will be transferred from the East 63rd Street and East 75th Street substations. This will create margin on the East Side to sustain demand growth through 2017. This station will include a "3G" design which will share two existing transformers at East 75th Street Substation via 13 kV connections to the York bus. The "3G" design results in the deferral of the 4th transformer and the associated cable from 2010 to 2028 and the elimination of the 5th transformer and the

5th transmission line, as compared to the conventional design. Projected capital expenditures for 2009, 2010 and 2011 are $137 million, $106 million, and $4 million, respectively.

Q. Does the new design meet the second contingency substation design criteria established by the Commission in 1961?

A. Yes. In 1961, the Commission directed Con Edison to design its substations supplying high load density networks "so that the loss of two substation transformers or their supply circuits at one time will not result in interruption of service from the related networks." (Order issued July 19, 1961, (no case number) approving findings conclusions and recommendations of Staff report, dated July 17, 1961, and directing Con Edison to comply with recommendations.) With the new design, the East 75th Street area substation can lose any two transformers or subtransmission feeders of the five available to its 13kV bus and still supply peak demand in its networks. Independently, the York area substation can lose any two transformers or subtransmission feeders of the five

available to its 13kV bus and still supply peak demand in its networks.

West Side

Astor Area Substation:

The Astor Area Substation will provide the needed capacity to permit load transfers from the existing W. 42nd Street No. 2 Area Substation and the West 65th Street No. 2 Area Substation. This station will be established prior to Summer 2009. The projected capital expenditure in 2009 is $6 million.

West Side Switching Station:

Establishment of the proposed West Side Switching Station (2016) will provide 138kV transmission capacity to the Hudson Yards Area Substation, as well as five other future area substations. The 345kV bus will have provisions to reinforce the 49th Street substation, and for future transmission feeder and/or generator interconnections. In order to facilitate the design and timely construction of the West Side Switching Station, suitable sites need to be identified and acquired well in advance of the planned start of construction. This requires adequate funding to allow

for timely purchase, environmental testing, and preparation of the West Side Switching Station site. The projected capital cost for land is $200 million, of which $100 million is forecasted in 2011.

Hudson Yards:

The new Hudson Yards Area Substation (2017) will be designed and constructed to meet its 2017 service date. Establishment of the new Hudson Yards Area Substation will relieve the West 49th Street source station via load transfer from the W. 42nd Street No. 1 Area Substation to create the new Liberty Network. The projected capital expenditures of $30 million in 2009 and 2010, respectively, are for land acquisition.

Queens

The Company's energy plan to support economic growth in the borough of Queens during the next three years includes planning, land acquisition, and commencement of engineering and design of a new switching station and three area stations.

Newtown Area Substation:

This substation will be located in the Sunnyside section of Queens and will be designed for up to five

138/27kV 93.3 MVA transformers and five complete switchgear sections supplying the 27kV distribution system. Based on the current Ten-Year Demand Growth Forecast, the North Queens Area Substation, supplying the Long Island City Network, will require load relief during the next five years. The North Queens area station cannot be expanded; therefore, load relief must be accomplished through load transfers. Approximately 201 MW will be transferred from the North Queens substation to the new Newtown Substation to create the new Borden and Sunnyside Networks (both carved out of the existing LIC Network). The service date for the new Newtown substation will be advanced two years to 2011 because of net savings over the cost of network reinforcement and because the splitting of the Long Island City Network will have a significant reliability benefit. It should be noted that we are striving to accelerate that advanced service date to 2010. Capital expenditures are estimated at $72 million, $56 million, and $4 million, for 2009, 2010, and 2011, respectively.

Brooklyn

Gateway Area Substation:

Based on the current Ten-Year Demand Growth Forecast load projections, Bensonhurst No.2 area station will require load relief in 2017. The station cannot be expanded, and load relief must be obtained through load transfers. A new area substation in Brooklyn is required to supply the load to be transferred from Bensonhurst No.2. The new substation, Gateway Substation, will initially have sufficient capacity to accommodate the transfer of approximately 180 MW from Bensonhurst No.2 to establish the new Canarsie Network. In order to facilitate long-term planning and design of Gateway Substation, suitable sites must be identified and acquired at least two years in advance of the planned start of construction. This requires adequate funding to allow for timely purchase, environmental testing, and preparation of the new substation site. The Company is currently negotiating for a potential site with expectations to purchase it in 2009 for about $7 million.

Staten Island

Woodrow Area Substation - Third Transformer Installation:

The expansion of the Woodrow Area Substation, by adding one additional 138/13kV transformer and a new 138kV supply feeder from the existing Fresh Kills 138kV Switching Station, is currently under construction and is expected to be operational prior to the summer of 2010. This added capacity will satisfy both short-term and long-term demand growth in the Woodrow load area. Due to the implementation of DSM initiatives, the Company was able to defer this project, which was previously scheduled to be in service in May 2008. Costs are estimated at $22 million and $6 million in 2009 and 2010, respectively.

Q. Please describe the other substation projects intended to support economic growth?

A. We are continuing the installation of dual speed fans at existing area substation transformers for the purpose of obtaining additional transformer capacity. This approach allows the deferral of more expensive load relief measures such as distribution load transfers or the addition of new substation transformers. The following substations have been identified as candidates for this program: West 65th Street No. 2 (five transformer banks for 2008/2009),

1 Fox Hills (two transformer banks for 2011) and Plymouth
2 (five transformer banks in 2013/2014). The cost for
3 this program will be $1 million in 2009 to complete the
4 installations at West 65th Street No.2 and $1 million
5 in 2011 for Fox Hills.
6 An additional project to support economic growth and
7 increase energy efficiency is the installation of
8 capacitor banks. These banks help adjust the power
9 factor and voltage on the system. An additional 20 MVAR
10 in capacitor banks will be installed at the Parkchester
11 area station prior to the summer of 2010 to increase
12 the station capability to 167 MW. The cost for this
13 project will be $1 million in 2009 and $1 million in
14 2010.
15 Q. Please describe the projects listed under "Generation
16 Interconnection" on Exhibit __ (IIP-2).
17 A. In order to allow the interconnection and operation of
18 additional generating resources within New York City,
19 key system components must be installed including:
20 circuit breakers, fault current limiters, reactors, and
21 phase angle regulators. Generation Interconnection
22 projects will install these components and upgrade the
23 existing system to permit the safe and reliable

interconnection of future proposed generation. There are currently two interconnection projects in our plan: Astoria East Switching Station and Corona Switching Station. As part of the NYISO *Fault Current Mitigation Plan* for Class Year 2001 developers, a bus tie series reactor at the Corona 138 kV Substation and a bus tie phase angle regulator at the Astoria East Substation are needed to mitigate incremental fault currents identified by the NYISO analysis for the Class Year 2001 developers. The funding requirement for the Astoria East phase angle regulator is $14 million, $20 million and $2 million in 2009, 2010 and 2011, respectively. The funding requirement for the Corona series reactor is $11 million, $15 million and $2 million in 2009, 2010 and 2011, respectively.

Support Economic Growth
Substations Operations O&M Programs

Q. I show you a document entitled, "CONSOLIDATED EDISON COMPANY OF NEW YORK INC. - SUBSTATION OPERATIONS O&M PROGRAMS" and ask whether that document was prepared under your direction?

A. Yes, it was.

MARK FOR IDENTIFICATION AS EXHIBIT __ (IIP-3)

Q. What does Exhibit __ (IIP-3) show?

A. Exhibit __ (IIP-3) shows the O&M funding requirements for Substation Operations (Switching Stations and Area Substations) for the Rate Year and the 12-month periods ending March 31, 2011, 2012, and 2013, including a list of the planned projects and their associated estimated costs.

Q. Do programs approved under the current electric rate plan need to be funded for O&M cost going forward?

A. Yes. A number of programs approved by the recent electric rate order will continue. The proposed funding levels for some such programs during the rate year commencing April 2008 are the same as the level reflected in current rates. Where there was no spending for these programs in the historical period, they are considered program changes for purposes of this filing and therefore coupled with a request for incremental funding when compared with spending in the historical period. Where spending for a program is projected to increase above current levels, we explain the reasons why. Details of these programs are provided under the six thematic categories (Support

Economic Growth, System and Component Performance, etc.) of our presentation of capital and O&M programs and projects.

Q. Please describe the Substation Operations O&M requirements of $ 5.2 million for the Rate Year shown for "SSO Staffing - New Facilities" under the category of "Support Economic Growth" in Exhibit __ (IIP-3).

A. As discussed above, the Company will commission a number of new substations over the next few years, including, Parkview, Rockview, Astor, York, Academy and Newtown Area Substations. The new stations will require operators to perform switching operations and specified routine inspections, as well as provide procedural oversight of maintenance and other work activities. In addition, maintenance personnel will be required to perform these maintenance activities. These maintenance functions include seasonal preparation, preventive maintenance inspections, corrective repairs and environmental compliance.

Q. Briefly describe the human resource hiring and employee training requirements associated with staffing these new facilities.

1 A. Substation Operations is a highly complex working
2 environment that requires formalized and field training
3 in order to run a substation in a safe, productive and
4 environmentally sound manner. In order to adequately
5 prepare the operating and maintenance personnel to
6 assume their required work functions, Substation
7 Operations plans to hire station personnel in advance
8 of commissioning the new stations. Incremental resource
9 additions for the operation, maintenance and testing of
10 newly constructed and commissioned substations is
11 required.
12 Q. Please identify the white paper exhibit that provides
13 additional information Substation Operations' staffing
14 requirement.
15 A. These incremental resource requirements are discussed
16 in detail on pages 18-19 of Exhibit __ (IIP-10).
17 Q. Does this conclude your testimony regarding Substation
18 projects required to support economic growth?
19 A. Yes.
20 Q. Does the Company have any capital programs associated
21 with the transmission system that are intended to
22 support economic growth?
23 A. Yes.

1 Q. I show you a document entitled, "CONSOLIDATED EDISON
2 COMPANY OF NEW YORK INC. - SYSTEM AND TRANSMISSION
3 OPERATIONS CAPITAL PROJECTS - TRANSMISSION OPERATIONS
4 CAPITAL PROJECTS/PROGRAMS" and ask whether that
5 document was prepared under your direction?
6 A. Yes, it was.
7 MARK FOR IDENTIFICATION AS EXHIBIT __ (IIP-4)
8 Q. What does Exhibit __ (IIP-4) show?
9 A. Exhibit __ (IIP-4) shows the capital funding
10 requirements for Transmission Operations over the
11 period 2008 through 2012 including a list of the
12 planned programs and projects and their associated
13 estimated costs. The programs projects are presented
14 in the following categories: (1) Support Economic
15 Growth; (2) System and Component Performance (including
16 Failures); and (3) Public Safety and Environmental. Our
17 testimony will discuss the specific programs and
18 projects in each of these categories. We have also
19 prepared an exhibit for each category that contains
20 "white papers" that provide more detailed information
21 about each of the programs and projects in that
22 category. We will identify these "white paper"
23 exhibits as we discuss each category.

Support Economic Growth
Transmission Operations Capital Programs

Q. Please describe the Transmission Operations programs listed under "Support Economic Growth."

A. In addition to installing new transmission feeders to supply all of the new substations previously discussed, the costs of which are included in the substation projects shown in the "Support Economic Growth" category on page 1 of Exhibit __ IIP-2, our Transmission Operations department has the following capital projects intended to address projected demand growth.

Vernon - W49th Street 38M72 Upgrade- This project will install a phase angle regulator on feeder 38M72, between the Vernon 138KV Switching Station and the West 49th Street Switching Station. The installation will include switchgear, relay protection, telemetry and controls to enable the transfer of up to 156 MW (the current rating of 38M72) between the two stations. Currently, under second contingency loss of transmission feeders M51 and M52, one of the relief measures for the West 49th St. load pocket would be the usage of the emergency tie 38M72 between Vernon and

West 49th St. At present, the flow on the tie is subject to the phase angle difference between the two stations. While there is no direct flow controllability on the line, the flow can currently be regulated through the manipulation of the MW output of the Poletti generator, which is a radial source to the E13th Street / W49th Street load pocket. However, the planned retirement of the Poletti generator in the spring of 2010 will result in the loss of this controllability. The addition of a 138KV phase angle regulator in series with the feeder will enable direct control of the emergency tie 38M72. The project will also include all necessary upgrades to switchgear and bus work at the Vernon 138 kV switching station's East ring bus in order to withstand the impact of a worst case short circuit current. The funding for this project is $20.1 million and $22 million respectively in 2009 and 2010.

Dynamic Feeder Rating - This is a multi-year program to provide funding for upgrading the existing dynamic feeder rating ("DFR") systems, and for the installation of a new DFR system on a selected feeder. DFR provides

1 feeder ratings in real time, taking advantage of actual
2 ambient conditions and loading to more accurately
3 calculate the feeder loading capability. This program
4 has served to improve both normal and contingency
5 capabilities on our transmission system and, in doing
6 so, has improved both reliability and economic flows.
7 Costs are estimated at $1 million in each of 2009, 2010
8 and 2011.
9 Q. Please identify the white paper exhibit that provides
10 additional information about the two Transmission
11 Operations projects that you have described.
12 A. The white paper exhibit describing the Transmission
13 Operations capital and O&M programs and projects that
14 support economic growth is titled "Support Economic
15 Growth - System and Transmission Operations." The
16 capital projects are described on pages 2 through 4 of
17 that exhibit.
18 MARK FOR IDENTIFICATION AS EXHIBIT __ (IIP-11)
19 Q. Does this conclude your testimony regarding
20 Transmission Operations capital projects supporting
21 economic growth?
22 A. Yes. We will discuss the remainder of Exhibit __ (IIP-
23 4) later on, but now we would like to discuss the

reinforcement of our electric distribution system to support economic growth.

Q. Please explain how the Company plans to reinforce its electric distribution infrastructure as a result of economic growth within its service territory.

A. As stated previously, economic indicators continue to identify strong growth opportunities in our service territory. This anticipated load growth is not only driving the need for substation infrastructure but it is also resulting in expansions to the local distribution system to connect these new or additional loads. Con Edison's Electric Operations Organization will address this anticipated load growth on the distribution system by installing, reinforcing, and upgrading, as necessary, primary network feeder cables, network transformers, underground secondary cable, non-network primary and secondary cables and wires, non-network transformers, and underground and overhead services. Also, we will transfer load between networks in the distribution system to relieve potential overloads at area substations when adequate capacity is available at neighboring area substations and it is economically feasible.

1 Q. I show you a document entitled, "CONSOLIDATED EDISON
2 COMPANY OF NEW YORK INC. - ELECTRIC OPERATIONS CAPITAL
3 PROGRAM" and ask whether that document was prepared
4 under your direction?
5 A. Yes, it was.
6 MARK FOR IDENTIFICATION AS EXHIBIT __ (IIP-6)
7 Q. What does Exhibit __ (IIP-6) show?
8 A. Exhibit __ (IIP-6) shows the capital funding
9 requirements for Electric Operations for the years
10 2009, 2010, and 2011 as well as the Company's current
11 five-year capital program for Electric Operations for
12 the period 2008 through 2012, including lists of the
13 planned programs and projects and their associated
14 estimated costs.
15 These programs and projects are categorized as follows:
16 (1) Support Economic Growth; (2) System and Component
17 Performance; (3) Public Safety and Environmental; (4)
18 Storm Hardening and Response; (5) Advanced Technology;
19 and (6) Process Improvement.
20 Our testimony will briefly discuss the specific
21 programs and projects in each of these categories. We
22 have also prepared an exhibit for each category that
23 contains "white papers" that provide more detailed

information about each of the programs and projects in that category. We will identify these "white paper" exhibits as we discuss each category.

Support Economic Growth
Electric Operations Capital Programs

Q. Please describe the Electric Operations capital programs and projects listed in Exhibit __ (IIP-6) under "Support Economic Growth."

A. These programs are intended to address increased demand on our distribution system due to increased customer consumption of electricity as well as the addition of new customers. The category "Support Economic Growth" in Exhibit __ (IIP-6) includes many specific programs and projects that, in turn, are summarized into categories of New Business, System Reinforcement of Area Substation Load Relief, Base Growth/Relief, and Distribution Substation. The white paper exhibit describing the Electric Operations capital and O&M programs and projects that support economic growth is titled Electric Operations - Support Economic Growth. The capital projects are described on pages 2 through 25 of that exhibit.

MARK FOR IDENTIFICATION AS EXHIBIT __ (IIP-12)

Q. Please describe the New Business category under "Support Economic Growth."

A. New Business consists of projects that connect new customer load to the distribution system. It also includes the upgrade of existing services to supply specific, identified additional load.

Q. Please continue.

A. Our system load growth from new business activity is forecasted to increase approximately 150 MWs per year. This load growth is not only driving the need for new substations, it is also resulting in significant expansions to the local distribution system to connect these new or additional customer loads.

In recent years, NYC has issued record levels of new permits for new or renovated buildings. There were 31,902 permits for new units of privately owned housing in 2007, 30,927 in 2006, and 31,599 in 2005 for New York City. While some information is reporting that these trends are expected to level off, permit volumes are still at record levels and economic indicators continue to identify strong commercial and residential growth opportunities in our service territory.

1 Specifically Ridge Hill, Gotham Center, Tishman Hotel,
2 Brookfield Offices Towers, Manhattan's West Side,
3 Columbia's Manhattanville Campus, and Boston Properties
4 Office Towers are all major projects that are currently
5 planned or working.
6 Service territory construction activity has resulted in
7 an overall 7 percent increase in Con Edison's service-
8 related activity from 2004 through 2007. In addition,
9 from 2006 to 2007, there has been a 14 percent increase
10 in large cost projects that result in capital costs
11 over $100,000. As we analyze the distribution system
12 to connect these new loads, we find that in many cases
13 the existing system is at or approaching its capability
14 and the addition of this load can no longer be served
15 simply by extending a service lateral from our
16 distribution system to the customer. Many of these
17 projects will require extensive infrastructure
18 reinforcement such as: secondary main reinforcement
19 (including new conduits and new or enlarged subsurface
20 structures), primary feeder extensions and transformer
21 vault installations.
22 Q. What is the funding associated with the specific
23 projects under the New Business Category?

1 A. As shown on Exhibit __ (IIP-6), New Business
2 Installation Capital costs (ED1) are funded for $157
3 million in 2009, $143 million in 2010, and $142 million
4 in 2011.
5 New Business Meter Installations are funded for $17.7
6 million in 2009, $17.7 million in 2010, and $18.1
7 million in 2011.
8 Q. Please describe the System Reinforcement Area
9 Substation Load Relief category under "Support Economic
10 Growth."
11 A. In order to identify the scope, cost and timing of
12 future area substation reinforcements, a Ten-Year Load
13 Relief Program is initiated every fall following the
14 summer peak demand experience. Peak Load Forecasting
15 provides a revised peak network/load area forecast.
16 This new load forecast incorporates demand reductions
17 as a result of energy efficiency programs.
18 The electric load forecast for each area substation is
19 developed and compared to substation capabilities.
20 Calculations are derived based on ratings obtained from
21 designs which provide for continued supply should we
22 lose one or two feeders (first or second contingency).
23 Area substations projected to exceed their capabilities

within the next ten years are identified and a load relief plan is developed based on feasibility and cost of the potential options to resolve the deficiency, such as energy efficiency program, increasing the area substation capability, and building new substation. Projects which are considered to provide load relief for area substations and sub-transmission feeders include the following:

- Construct and expand switching stations
- Construct and expand area stations
- Upgrade/add sub-transmission feeders
- Upgrade/add transformers
- Upgrade/add distribution bus and breakers
- Transfer load to existing or new area stations.

Load relief options are analyzed and a load relief plan is proposed considering the reliability and economics of the planned load relief options.

Q. What are the specific projects targeted in the "System Reinforcement Area Substation Load Relief" category?

White Plains to Rockview Transfer - This project is to transfer 30 MW from the White Plains Substation to the

1 Rockview Substation. This project will be funded for $2
2 million in 2010 and $10 million in 2011.
3 **Sherman Creek to East 179th Street Transfer** - This
4 project will transfer 6 MW from the Riverdale Network
5 fed by the Sherman Creek Substation to the Fordham
6 Network fed by East 179th Street Substation.
7 This project will be funded for $ 0.5 million 2009.
8 **Newtown Substation** - This project will transfer 201 MW
9 from the North Queens substation to the new Newtown
10 Substation. The plan will split the existing Long
11 Island City (LIC) network into three networks, through
12 the creation of two new networks, Sunnyside and Borden,
13 which will consequently result in three networks that
14 are smaller and more reliable than the original LIC
15 network. The new (now reduced) LIC network will only
16 cover the area that is north of Northern Blvd. This
17 project will be funded for $10 million in 2009 and $8
18 million and 2010.
19 **Herald Sq. Transfer** - This project will transfer the
20 113 MW Herald Square Network fed by the West 42nd
21 Street No. 2 Substation in its entirety to the new

Astor substation. This project will be funded for $3 million in 2009.

Pennsylvania/Waterside - This project is to establish a network split by transferring 65 MW from the Pennsylvania Network fed by the West 42nd Street No. 1 Substation to create a new Waterside Network fed by the West 42nd Street No. 2 Substation. This project will be funded for $4.5 million in 2009 and $2.1 million in 2010.

Hunter Transfer - This project will transfer the 87 MW Hunter Network fed by the East 63rd Street No.1 Substation in its entirety to the East 75th Street Substation. This project will be funded for $1.1 million in 2010 and $14.1 million in 2011.

Fox Hills/Fresh Kills Load Transfer Capability - This project will create a remotely operable tie between feeders 33R02 and 33R12, via new aerial cable along Forest Ave. between Silver Lakes #2 and Westerleigh unit substations. This project will be funded for $1.2 million in 2009.

Randall's Island - This project will transfer the entire 33 MW demand of Randall's Island from the Hell

Gate Substation to the Bruckner Substation. This project will be funded for $2.5 million in 2009.

Lenox Hill/Cornell - This project is to establish a network split by transferring 157 MW from Lenox Hill Network fed by the East 75th Street Substation to create a new Cornell Network fed by the new York Substation. This project will be funded for $1.8 million, $10.6 million, and $5.2 million in 2009, 2010, and 2011, respectively.

City Hall to Cortlandt - This project will transfer 25 MW from the City Hall Network fed by the Cherry Street Substation to the Cortlandt Network fed by the Seaport No.1 Substation. This project will be funded for $1.1 million in 2009 and $2.0 million in 2010.

Q. Please describe the Base Growth/Relief category under "Support Economic Growth" on Exhibit __ (IIP-6)

A. These are programs that provide funding to minimize the risk of our equipment operating above its design limits as a result of the increased electric requirements associated with economic growth.

Q. Please describe the specific programs in the base growth/relief category?

A. The specific programs targeted include:

Primary Feeder Relief - The Company will reinforce all network distribution feeders that are projected to operate above 100 percent of their ratings, for both normal (all equipment in service) and contingency (any two feeders out of service) conditions during summer peak load periods.

This ongoing program will be funded for $43.3 million in 2009, $43.8 million in 2010, and $44.3 million in 2010 thru 2011.

Network Transformer Load Relief - Relieving network transformers that are projected to operate beyond their normal or contingency ratings will improve both network reliability and extend the service life of the equipment. The relief includes installing new transformers, upgrading transformer network protectors, and reinforcing associated secondary mains.

This ongoing program will be funded for $54.7 million in 2009, and $45.6 million in 2010, and $46.2 million in 2011.

Overhead Area Feeder Relief - This program provides for the reinforcement of open-wire and underground cable on

overhead system feeders that are projected to operate above 100% of their normal or above 130% of their emergency rating for 4kV feeders and 100% of their normal or emergency rating for all other overhead voltages.

This ongoing program will be funded for $11.5 million in 2009, $11.7 million in 2010, and $13 million in 2011.

Overhead Transformer Relief - This program is to upgrade overhead transformers that have projected loading greater than capability during the summer period.

This ongoing program will be funded for $2.2 million annually in 2009, 2010, and 2011.

Q. Please describe the Distribution Substation Load Relief category under "Support Economic Growth."

A. The program is to relieve distribution substations which are projected to be above their normal and/or emergency rating for their design condition. If the projected peak load is higher than the substation equipment rating, then the station is listed for an upgrade. The program is to replace the overloaded

equipment that exceeds 100% of its emergency rating with new equipment with higher capacity and/or make load transfers to other areas that are less loaded. This ongoing program will be funded for $6.4 million annually.

Support Economic Growth
Electric Operations O&M Programs

Q. I show you a document entitled, "CONSOLIDATED EDISON COMPANY OF NEW YORK INC. - ELECTRIC OPERATIONS O&M PROGRAMS" and ask whether that document was prepared under your direction?

A. Yes, it was.

MARK FOR IDENTIFICATION AS EXHIBIT __ (IIP-7)

Q. What does EXHIBIT __ (IIP-7) show?

A. Exhibit __ (IIP-7) shows the O&M funding requirements for Electric Operations for the Rate Year and the 12-month periods ending March 31, 2011, 2012, and 2013, including a list of the planned projects and their associated estimated costs.

Q. Please describe the program changes to Con Edison's Electric Operations O&M programs that support economic growth.

A. We will describe four program changes to Con Edison's O&M programs that support economic growth. Additional information about these programs and the program changes is contained on pages 26, 28, and 35 of Exhibit __ (IIP-12) (white papers). These program changes are as follows:

Customer Focused Service Ruling Program - This program change supplements Customer Engineering staffing to support the timely engineering design of new or additional customer load requirements.

This ongoing program will be funded for $0.2 million annually in RYE 2010, RYE 2011, and RYE 2012.

Smart Electric Technology Program - This program promotes customer use of energy efficient and environmentally friendly electro-technologies while maximizing the value of the assets and investment in the distribution system by improving its load factor and by supporting regional carbon reduction goals. Pilot programs in areas such as electric heating, commercial refrigeration, water treatment and plug-in hybrid electric vehicles (PHEV) will provide information needed to design initiatives that are

1 effective while bringing clean energy, efficient
2 electric technologies to market as a replacement for
3 existing fossil based fuels
4 This ongoing program will be funded for $0.6 million
5 annually in RYE 2010, RYE 2011, and RYE 2012.
6 **Commercial Service Representative Automation**
7 Con Edison's Energy Services organization maintains
8 direct relationships with our customers. This program
9 is designed to facilitate that relationship by
10 modernizing the workflow in Energy Services, involving
11 clerical, Commercial Service Representatives and
12 Customer Project Managers. This program will improve
13 customer service through automated contractor and
14 customer communications. This program will be funded
15 for $0.3 million annually in RYE 2010, RYE 2011, and
16 RYE 2012.
17 The capital requirements for this program are shown in
18 the "Process Improvement" section of Exhibit __ (IIP-
19 6). The white paper for this program is included with
20 the white papers for Electric Operations "Process
21 Improvement" that we discuss later in our testimony.
22 Q. Does this conclude your testimony regarding Company

1 programs and projects associated with economic growth?
2 A. Yes. Now the Panel would like to discuss Con Edison's
3 system and component performance.
4
5 **SYSTEM AND COMPONENT PERFORMANCE**
6 Q. You stated earlier that the programs and projects for
7 system component and performance are designed to
8 maintain and improve the reliability of the Company's
9 transmission and distribution infrastructure both in
10 the near and long term. Please describe the reliability
11 of electric service in Con Edison's service area.
12 A. Con Edison has been consistently recognized as one of
13 the most reliable electric systems in the United
14 States. In 2006, our overall reliability was 159
15 customer interruptions per 1,000 customers. In 2007, it
16 was 156 customer interruptions per 1,000 customers. The
17 industry average is about 1,200 customer interruptions
18 per 1,000 customers. A national survey comparing
19 investor owned utilities ranked our reliability as
20 seven times better than the industry average.
21 Q. I show you a document entitled, "Customer Interruption
22 Rate," and ask whether that document was prepared under

1 your direction?

2 A. Yes, it was.

3 MARK FOR IDENTIFICATION AS EXHIBIT __ (IIP-8)

4 Q. Please describe what is shown on Exhibit __ (IIP-8).

5 A. Exhibit __ (IIP-8) depicts the national and New York
6 State customer interruption rate compared with the
7 interruption rate on Con Edison's system. As shown on
8 the exhibit, a Con Edison network customer experiences
9 an outage approximately 50 times less often than the
10 average customer in the United States.

11 Q. What is the overall purpose of the Company's programs
12 intended to improve reliability.

13 A. Con Edison has always placed significant emphasis on
14 maintaining the highest level of reliability. Our
15 customers expect continuous, reliable electric service
16 at work and at home. Reliability, as well as safety,
17 are always the preeminent factors when determining how
18 we conduct business. All of the Company's reliability
19 programs and projects are intended to maintain the
20 operational capability and the reliability and safety
21 of the transmission, substation, and distribution
22 systems. The goal of the programs and projects in the
23 "System and Component Performance" category is to

1 address near-term reliability issues that have been
2 identified, as well as to programmatically and
3 continuously upgrade and replace system components
4 before they become degraded or obsolete and are no
5 longer supported by manufacturers with spare parts and
6 technical support.
7 Q. Has the material cost of maintaining the electrical
8 infrastructure increased during the last few years?
9 A. Yes. The cost of maintaining the electrical
10 distribution infrastructure has increased dramatically
11 since the end of 2005. During this period, the cost of
12 copper, a key component of transformers and cable used
13 in both the overhead and underground network system,
14 increased over 80% between the end of 2005 and April,
15 2008 (Source: Average Monthly COMEX Copper 2005-2008).
16 Other component items, such as steel, which is used in
17 transformers, and synthetic rubber, which is used in
18 cable jacketing, have increased by approximately 40%
19 and 15%, respectively, since the end of 2005 (Source:
20 Propurchaser Economic Reports and BLS Code WPU 07110224
21 - Synthetic Rubber). The result of these increases in
22 raw materials has been price increases of between 40-
23 65% on the two core items used in our distribution

system, transformers and cable, during the past 27 months. Further, worldwide demand for industrial products has resulted in an increase of over 30% in the price of copper and cold rolled steel since January of this year. This will likely result in even higher prices for these items in the coming months. The Company will closely monitor component costs over the next several months, and our update testimony will further address the impact of these increases on the Company's rate year revenue requirement.

System and Component Performance
Substations Operations Capital Programs

Q. Please provide an overview of the Company's Substations Operations programs and projects shown under "System and Component Performance" on Exhibit __ (IIP-2).

A. There are currently 38 switching stations and 58 area substations (soon to be 60 area substations with the addition of Parkview and Rockview in 2008)) located throughout Con Edison's electric system. Most of these stations are over 40 years old. The funding for reliability work provides for the replacement and/or upgrading of major components such as circuit breakers (345 kV, 138 kV, 33 kV, 27 kV and 13 kV), disconnect

1 switches and circuit switchers, protective relay
2 equipment, communication equipment, battery systems,
3 transformers, and miscellaneous equipment, such as
4 potential/current transformers, insulators, surge
5 arresters, and wiring. The goal is to programmatically
6 upgrade and replace these major components before they
7 become degraded and failure prone. The integrity of
8 the physical structures (substation buildings, relay
9 houses/cabinets, and switchgear houses) that house the
10 electrical components of a substation is also important
11 to system reliability.
12 Substations Operations System and Component Performance
13 programs are shown on Exhibit __ (IIP-2) under three
14 categories, "Equipment," "Relays," and "Miscellaneous
15 Components." The white paper exhibit describing the
16 Substation Operations System and Component Performance
17 capital and O&M programs and projects is titled "System
18 and Component Performance Substation Operations." The
19 capital projects are described on pages 1 through 68 of
20 that exhibit.
21 MARK FOR IDENTIFICATION AS EXHIBIT __ (IIP-13)
22 Q. Please discuss the Substations Operations System and
23 Component Performance "Equipment" programs on Exhibit

1 __ (IIP-2) beginning with the program to modernize the
2 Elmsford Substation.
3 A. **Elmsford Substation Refurbishment** - The Elmsford
4 substation, located in Westchester County, is over 49
5 years old, and some equipment is experiencing operating
6 problems. The existing substation consists of 4
7 transformers, associated sections of switchgear, and
8 three 20 MVAR capacitor banks. The equipment
9 enclosures have deteriorated resulting in leaks and
10 equipment outages due to water damage. The equipment
11 supporting structures are corroding, and switchgear
12 components have also been susceptible to water damage.
13 As the structural components age, manual operation of
14 the old heavy circuit breakers has become increasingly
15 difficult and requires more time and resources. This
16 project will modernize the Elmsford substation with the
17 installation of a new control room with new
18 standardized controls, load management systems, and new
19 switchgear controlled by state-of-the-art relay
20 protection and automation. This project will also
21 vastly improve the reliability of the facility as well

as reduce the feeder processing durations of the Elmsford electric distribution system.

The estimated costs for this ongoing project are $37 million, $36 million, and $8 million in 2009, 2010, and 2011, respectively.

Q. Please discuss the other Substations Operations System and Component Performance "Equipment" programs on Exhibit ___ (IIP-2) beginning with the programs to replace or overhaul circuit breakers.

A. A major component of both switching stations and area substations are circuit breakers. Circuit breakers are used to stop the flow of current during both normal and emergency conditions. Under normal conditions, they are used to isolate equipment for maintenance, replacement and load transfer. During emergency conditions, circuit breakers are triggered by protective relay systems to automatically isolate faulted equipment. We are continuing our program for the replacement of the older or more problematic circuit breakers in each of the voltage classifications.

345kV and 138kV Breaker Replacement - There are presently 425 345kV and 138kV circuit breakers included in this program. The scope of work includes the replacement or overhaul of these breakers when they come due for maintenance according to their Engineering approved maintenance schedule. Replacement is performed with a focus on improving reliability when replacement is deemed more cost effective than overhaul based on a number of considerations including: progressive deterioration, lack of spare parts, high maintenance costs, oil and/or gas leakage and poor performance history. The 345kV GE type ATB breaker is a breaker type that has a poor performance history on the Con Edison system as well as the industry as a whole. Replacement of all of these breakers is expected to be completed by the end of 2008. Additional 345kV breaker types will continue to be assessed and evaluated for replacement. Similarly, 138 kV Westinghouse 1380SF6 and Westinghouse CASP45 breaker types have been targeted for replacement due to limited availability of spare parts, cost of overhaul versus replacement, and performance history associated with

SF6 leakage in particular. In addition, the replacement of assorted oil-filled breakers provides reliability benefits. This program is a significant driver in the reduction of SF6 emissions and forced outages. The replacement of deteriorated or problematic circuit breakers provides system enhancement and is cost effective versus frequent repairs. In addition, this program will reduce future maintenance costs by reducing the need to replenish expensive SF6 gas as well as reduced maintenance requirements and longer overhaul frequencies associated with more modern breaker designs. This program is on-going. Breakers are overhauled according to their maintenance schedule or replaced as performance and maintenance history dictate. The scope of work for 2009-2011 will be determined based on the maintenance schedule of the breakers, breaker performance, and outage availability.

13kV and 27kV Breaker Replacement - This program provides funding to replace a number of existing 13 and 27kV circuit breakers installed in our substations that currently are not rated to be able to interrupt maximum fault currents under worst-case scenario fault

1 conditions. Circuit breakers will be replaced with the
2 highest rated circuit breakers available where the
3 maximum fault current could, under a worst-case fault
4 scenario, exceed their rating.
5 Based on 2005 study analysis, performed by the Company
6 and verified by an independent consultant (ABB), fault
7 currents exceed breaker interrupting capability at 35
8 area substations. This worst-case scenario is based on
9 all the equipment in the station being on line, a
10 failure occurring across all three phases at or near
11 the station switchgear, and perfect conductivity among
12 the phases at the failure point. Despite the
13 unlikelihood of all these factors occurring
14 simultaneously, we take the extra precaution of
15 physically isolating the three phases within the
16 station to further reduce the probability of such an
17 event.
18 A long-term system enhancement program is ongoing to
19 replace and/or upgrade all of these 13 and 27 kV
20 circuit breakers. Under this program, the first
21 priority was given to the stations where the potential
22 over-duty is 10 percent or greater. The second
23 priority was given to the substations where the

potential over-duty is between 3 and 10 percent. Finally, the substations with less than 3 percent potential over-duty will be addressed as the third priority. This program, in addition to other criteria, is geared to achieve Commission and third party objectives for breaker upgrades that will enable these stations to accept distributed generation (DG) interconnections.

Q. What is the estimated completion date and current status?

A. The current program is funded for $10.8 million annually to replace, minimally, 60 breakers per year. Based on the current estimates, this program will extend beyond the next 10 years. During the April 2007 through March 2008 rate period, sixty-three 13kV and 27kV breakers were completed as part of this program.

Q. Please describe the Company's disconnect switch and circuit switcher replacement program.

A. The **Replace Disconnect Switches** program will replace 138kV and 345kV disconnect switches. Disconnect switches are used to electrically isolate transmission lines or station equipment, such as circuit breakers

and transformers. There are over 1,400 disconnect switches in our bulk power system. Many of them have been in service in excess of 30 years. As the disconnect switches age, we have experienced maintenance issues with various components, and hot spots at the contact points. Some replacement parts are no longer available from the original equipment manufacturers. Replacement parts that are available are usually special custom order with a long lead-time. Unless the switches are replaced, the probability of malfunction increases and, with no readily available replacement parts, equipment outages may be extended while parts are custom made. The planned expenditures of $4.6 million per year in 2009, 2010, and 2011 will support this ongoing program.

Similarly, the first generation of circuit switchers has become obsolete since they are no longer supported by their original manufacturer with parts or service. The **Obsolete Circuit Switcher Replacement Program** will replace circuit switchers on a proactive approach since replacing the circuit switchers on an emergency basis, rather than on a scheduled basis, increases the

replacement cost and impacts reliability by subjecting the system to contingency operation and increased outage durations. This program will provide for the replacement of one circuit switcher per year at a cost of $0.5 million per year. However, program funding to replace approximately 3 - 4 circuit switchers per year would be required to proactively address aging and obsolescence issues. The replacement of approximately 3-4 circuit switchers per year would cost approximately $2 million. In order to mitigate the rate request in this filing we are limiting the program to one replacement per year and will target obsolete circuit switchers with high voltage ratings.

Q. Please describe the Company's obsolete transformer replacement program.

A. The purpose of the **Replace Obsolete Transformers** program is to replace transformers whose parts have become obsolete and no longer available from the original equipment manufacturer. Included in the scope of this program is the installation of a moat system for the transformer vault, a new fire protection system, and a transformer condition monitoring system.

1 There are approximately 400 transformers on the system
2 of which approximately 150 are over 40 years old. As
3 these units approach the end of their life cycle, there
4 is an increase in the amount of corrective maintenance
5 and the probability of malfunction. Replacement parts
6 are often special custom order and require long lead
7 times to receive. Proactively replacing problematic
8 obsolete transformers prior to failure is cost
9 effective when compared to emergency replacement,
10 improves the reliability of the system, and provides a
11 process for life renewal of the aging transformer
12 fleet.
13 This program is funded for $13 million in 2009 and $21
14 million per year in 2010 and 2011 to allow replacement
15 of 2 area substation transformers and 1 transmission
16 level transformer per year. However, at this level of
17 planned replacement of 2 to 3 obsolete transformers per
18 year, the average age of these units will continue to
19 climb.
20 The average age of the power transformers on our
21 system installed as of 2002 is provided below. These
22 units represent the population of concern that
23 continues to age even while we install new units on

the system. With the current level of planned replacement with the obsolete transformer program of 2-3 per year, the average age of these units is projected as follows:

Year	Number of Units	Average Age	# > 30 years	# > 40 years
2002	368	27.7	192	66
2008	368	31.8	217	150
2012	368	34.3	224	172

The 2012 age analysis assumes a total of 11 transformer replacements in 2008 - 2012. It does not include additional replacements due to failures.

With the current population of 150 large power transformers greater than 40 years old, the Company would need to replace 10 transformers per year to replace these oldest units over a 15 year period, which

1 would proactively address transformer life cycle aging
2 issues, but would cost approximately $60-70 million per
3 year. Consequently, the Company is limiting the
4 program to replacement of 2 to 3 units per year, at a
5 cost of $13 million in 2009, in order to mitigate the
6 rate request in this filing while maintaining system
7 reliability.
8 Q. What is the current status of the program?
9 A. Transformers at two (2) area substations are currently
10 being replaced under this program: West 19th St. and
11 Cherry St. Both stations operate at 69kV. Since the
12 Company's long-term goal is to retire the 69kV system,
13 the replacement banks are being purchased with high
14 voltage windings that permit future reconnection to 138
15 kV or replacement is being coordinated with the upgrade
16 of 69kV supply transmission feeders to 138kV. On the
17 345kV transmission system, we expect to start replacing
18 one transformer per year in 2010.
19 W19th Street: Transformers 1, 2, 3, 4 have been
20 replaced. Transformer 5 replacement is in progress and
21 is scheduled to be completed in May 2008.
22

1 Cherry Street: Replacement of transformer 3 is in
2 progress and is scheduled to be completed in May 2008.
3 Replacement of transformer 4 will start in the fall of
4 2008 and is scheduled to be completed in spring 2009.
5 The replacement of future transformers is currently
6 under review and where feasible will be coordinated
7 with supply feeder replacement/upgrade.
8 Q. Does the Company have a program for the replacement of
9 failed transformers in area and switching substations
10 as well as generating stations on an emergency basis?
11 A. Yes, the **Failed Transformer Program** is an on-going
12 program that funds the cost of replacing three failed
13 transformers (transformers, phase angle regulators and
14 reactors) per year. To quickly restore system capacity
15 and reliability to pre-failure levels, spare
16 transformers are maintained for most types of units in
17 the system. The spare units are purchased and kept on
18 hand due to the long lead-time required for delivery of
19 a new transformer. The spare units are pre-tested and
20 partially assembled to reduce the time required for
21 replacement of a failed unit. The spare units are
22 prepared for long-term storage at the Astoria Spare

1 Transformer Yard and at other Company satellite
2 locations.
3 Based on an historical average, the Company's budget
4 has typically provided for three transformer failures
5 per year. The funding level required for these
6 replacements is estimated at $12 million per year.
7 This cost includes the installation of an existing
8 system spare and the purchase of a replacement for the
9 utilized system spare. The budget for each year
10 provides carryover of a unit failure in the fourth
11 quarter of the previous year.
12 In 2007, as a result of our reevaluation of recent
13 transformer failure activity and the increased
14 transformer manufacturing lead times, we revised our
15 spare retention policy to establish a higher
16 probability of spare availability in the event of a
17 transformer failure. This has resulted in a need to
18 increase our spare transformer inventory in addition to
19 purchasing replacements for spares actually used. The
20 funding requirement to increase the inventory and to
21 purchase replacements for failed units is $34 million
22 in 2009, $22.3 million in 2010, $20.3 million in 2011.
23 In 2012, we will return to a funding level of $12

million expected to simply allow for three transformer replacements per year. As described earlier, recent cost increases in the basic materials (copper, steel, rubber) required to manufacture transformers have substantially increased the cost of transformers.

Q. Do you have a program that provides for replacement or repair of equipment other than transformers?

A. Yes. Our program **Failed Equipment Other Than Transformers** program, Exhibit_ (IIP-2) page 2, is an on-going program with funding based on historical spending levels. This program is necessary to fund the restoration of anticipated substation equipment failures in order to maintain system design configuration and reliability. This program helps minimize the need to reallocate resources from other capital projects and programs in response to equipment failures. The program is funded for $1.5 million for 2009 - 2011, respectively.

Q. Please describe the Company's relay protection systems programs, shown in the "Relay" category of the "System and Component Performance" section of Exhibit __ (IIP-2).

A. The protective equipment (relays) and associated communication lines are the brain and nerve systems of our transmission/substation grid. The relays detect system disturbances and direct circuit breakers, whether at the local substation or a remote substation, to immediately isolate the faulted equipment. Three distinct programs have been developed to address obsolete and problematic components of this system and add additional functionality:

Relay Modification Program - This multi-year program provides for technology upgrades to identified relay protection systems at various substations. Implementation of this program will upgrade protection equipment to modern standards, improving reliability, preventing incorrect automatic relay operations, and providing better analysis capabilities.

This program includes:

- New microprocessor relays to provide security against incorrect relay operations caused by magnetic inrush current.
- New microprocessor relays to replace protection communication circuits that do not provide full

protection against communication line disturbances. Communication line disturbance has caused inadvertent loss of feeders. These relays need to be replaced with modern state-of-the-art relays to provide for a reliable and secure protection system.

- Upgrading existing electro-mechanical fault-detector relays used in conjunction with distance relays to provide security from mis-operations. The new Intelligent Electronic Device (IED) replacement relay design will greatly enhance the overall security of the relay system without compromising the reliability of operation during actual fault conditions
- Upgrade the existing obsolete, first generation solid state Westinghouse SBFU breaker failure timer relays currently installed on transmission level breakers. The current relays have a high power supply failure rate which renders the relay inoperable. This upgrade to IED-based devices will significantly enhance the reliability of these relay systems as well as provide additional capabilities such as storing oscillograph files after a relay operation to determine the root cause of an event.

Costs for the Relay Modification Program are estimated at $5.5 million annually in 2009, 2010, and 2011.

Upgrade Analog Circuits to Digital Fiber - This project allows for replacing outdated analog relay communication circuits, which are Verizon copper telephone lines that Verizon is phasing out support for, with digital multiplexing communication equipment and new digital and fiber lines at selected substations. Each installation will include two completely diverse sets of equipment in order to use both Verizon and Con Edison's (where available) fiber optic infrastructures, which provides both redundancy and diversity in the communication paths. Costs are estimated at $2 million annually in 2009, 2010, and 2011.

Control Cable Upgrade - AC and DC cables for outdoor substations are routed in covered troughs and ducts and in some cases conduit. Many of our stations are more than 40 years old and are subject to increasing rates of cable failure. This multi-year program provides funding for the systematic replacement of the older cables, conduits and junction boxes, and modification

of trough and duct systems as required to accommodate the new cables. These improvements will reduce inadvertent trips of electrical equipment at substations. The work is performed on a priority basis based on the condition of the cable and the outage availability of impacted equipment. Capital expenditures are estimated at $1 million annually in 2009, 2010, and 2011.

Q. Are there any other major substation components replacements that you would like to discuss?

A. Yes. Please refer to the "Miscellaneous Components" subsection of "System and Component Performance" in Exhibit __ (IIP-2).

Substation equipment requires monitoring (alarm panels and substation automation), testing (high voltage test sets and ground and test devices), back up power in the event of loss of off-site power (batteries), as well as the ability to be operated remotely (remote terminal unit).

Category Alarms - In most instances, alarm equipment was placed in service as part of the station commissioning. Therefore, our alarm equipment has been

in service for an average of 40 years. Due to lack of spare parts and/or vendor support of system modifications, the Company has been replacing high-maintenance units since the late 1990s at a rate of approximately two per year, but since more panels are becoming obsolete, the Company is proposing to accelerate the replacement to an average of four per year. This enhancement will improve the operational response to substation alarms. Costs are estimated at $2.25 million annually in 2009 and 2010, and $3.9 million in 2011.

Substation Automation Target Information System - The implementation of the Target Information System ("TIS") will allow employees to remotely and accurately access real time electrical system parameters and also automatically receive reports by exception whenever there are problems on our electrical system. Implementing this system will improve reliability, safety, and equipment availability goals. TIS will also allow the existing electromechanical relay systems in the field to be retrofitted without any equipment outages. In essence, the electromechanical relays will

gain the functionality of microprocessor relays, without the associated replacement cost. Costs are estimated at $2 million annually in 2009, 2010, and 2011.

High Voltage Test Sets - These devices are used to test power system equipment for incipient faults and fault locating. There are approximately 100 permanently installed distribution voltage level DC high potential ("hi-pot") test sets in Substation Operations and seven mobile DC test sets used for distribution feeder processing. Some of these test sets are over 20 years old and require frequent repair. The High Voltage Test Sets program will purchase and replace 3 DC test sets per year.

Con Edison has been studying the effectiveness of testing EPR and Poly insulated distribution cables with 0.1 Hz very low frequency ("VLF") AC test sets and has concluded that such testing is more effective on 13 kV cables than testing with high voltage DC test sets, which is effective for PILC cables. The Company continues to study whether VLF AC testing is more effective on 27kV EPR and Poly cables, but the data to

1 date is promising. Accordingly, to most effectively
2 test EPR and Poly insulated distribution cables,
3 alternate test sets having 0.1 Hz VLF AC capability
4 must be added to our system.
5 There are currently 3 mobile AC VLF test sets for
6 distribution feeder processing on the Con Edison system
7 (one per operating region in Manhattan,
8 Brooklyn/Queens, Westchester/Bronx). Under the High
9 Voltage Test Sets program, we will increase the number
10 of mobile sets with the purchase of an additional 3
11 mobile A/C VLF test sets. We will also purchase and
12 install 3 fixed A/C VLF station test sets per year to
13 expand the number of A/C hi-pots performed on
14 distribution feeders.
15 Transmission level test sets are required for the
16 testing of high voltage SF6 insulated equipment. The
17 High Voltage Test Sets program will also fund the
18 purchase of 2 new 345 kV transmission voltage A/C test
19 sets. These units will be utilized at W49th St., and
20 Dunwoodie substations.
21 Costs for the High Voltage Test Sets are estimated at
22 $5 million in 2009 and $2 million for 2010 and 2011.

Ground and Test Devices - Ground and test ("G&T") devices in substations are used to test and ground faulted distribution feeders. This program provides funding to replace G&T devices as needed to maintain adequate inventories for feeder processing. G&T devices provide for more efficient feeder processing when multiple feeders at a substation require processing simultaneously. Estimated costs are $1 million annually in 2009, 2010, and 2011.

Battery and rectifier replacement - DC systems which consist of batteries, battery chargers, load boards and associated controls and cabling are an essential component for the safe and reliable operation of the substations. DC systems ensure adequate and uninterrupted supply of current for control functions, indications, protective relaying and emergency light and power. To ensure continuous charge, substation batteries are connected to rectifiers and are periodically inspected for proper operation. As more electronic equipment is added to the substation, additional battery power is required. Load studies are performed at each station to determine if the 125 volt

DC battery systems can support the station load in the event of loss of offsite power. Based upon the individual analyses, batteries, and associated conduit, cable, load boards, battery chargers and rectifiers are replaced either due to load or because they have reached the end of their life cycle (12 to 15 years for batteries). Expenditures for this program are estimated at $3.5 million annually in 2009, 2010, and 2011.

Diesels/Blackstart Restoration (Phase 2) - Upgrade Station L&P - To further improve emergency power capability, the Company has installed diesel generators in various area substations to provide emergency supply for dielectric pressurization plants. Future phases of this program will connect these installed diesel generators to the station light and power ("L&P")boards to supply critical loads and further improve station reliability. Costs for this program are estimated at $1.2 million for 2009 and $1 million annually for 2010 and 2011.

SOCCS-Remote Terminal Unit Replacement - The Remote Terminal Units ("RTU") at the various substations

provide control capabilities and feed vital information back to the Energy Control Center, enabling remote supervision of the system and remote control of substation and feeder equipment. The original 1970's vintage SOCCS RTUs will be replaced with devices providing capabilities exceeding the legacy technology and will support the modern protocols that will be used by our new Energy Management System ("EMS"), as well as providing data to multiple locations (i.e., alternate and mobile locations). The RTUs will be replaced in a priority order based on service date and repair record. Costs are estimated at $3 million in both 2009 and 2010.

Q. Please continue.

A. **East River Complex - Install Wall** - The East River Complex is a critical facility consisting of steam and electric generating units as well as various on-site transmission substations. The East River Complex - Install Wall project provides for structural upgrades consisting of new reinforced concrete barrier walls along the FDR Drive between 14th Street and 13th Street. The extended wall along the FDR Drive will enhance

security at the complex and will also mitigate the wind/salt spray coming from the East River that causes build-up on the electrical equipment adjacent to the wall that has led to electrical flash over.

In addition, camera and electronic surveillance equipment, as well as physical security barriers at the facility entrances, will be installed to enhance security at this critical facility.

This project will cost $2.5 million annually in 2009 and 2010.

Substation Loss Contingency - This project prepares for the loss of any one of a number of selected transmission switching substations. The loss of a switching station could have severe impacts on the Company's ability to supply power within load pockets in its service area. Planning and procurement of spare equipment in advance of a substation loss will enable us to more rapidly restore the electric system. To date, restoration plans have been developed for the individual loss of one of several 345 kV, 138 kV, or 69 kV transmission switching substations. These plans will be used to develop engineering specifications for

1 procurement of some spare transmission and substation
2 equipment.
3 The project includes the purchase of spare transmission
4 equipment, such as cable sections, joints, pumping
5 plants, and splices, and substation equipment, such as
6 portable relay panels, current transformers, and
7 connecting hardware. This project facilitates our
8 capability to respond to load and transmission capacity
9 lost in the event of a total loss of a transmission
10 substation. Restoration plans and spare equipment will
11 facilitate a more rapid restoration of the electric
12 system. The Company estimates expenditures of $2
13 million annually in 2009, 2010, and 2011.
14 Q. What is the purpose of the Substation Continuance
15 Program?
16 A. At some substations, individual component replacement
17 is not cost effective, and a major overhaul replacement
18 of all components is more effective. The Company
19 refers to this program as "Substation Continuance."
20 Q. Please describe the various Substation Continuance
21 projects shown under the "Miscellaneous Components"
22 section of the "System and Component Performance"
23 category of Exhibit __ (IIP-2).

A. The Substation Continuance projects include:

East 63rd Street Substation - The station was placed in service in 1959, is nearing 50 years of age, and is one of the area stations with outdoor switchgear and underground protection and control equipment. Being an outdoor substation, the weather has taken its toll on the physical structures that house the equipment as well as its wiring. This project is necessary to ensure the continued reliable operation of the substation. During 2008, Engineering will evaluate the various upgrade options and develop the conceptual design drawings, a scope of work, a milestone schedule, and the concept estimate. Engineering will also solicit design proposals for the East 63rd Street Substation upgrade project. The funding for this project is $5 million in 2009, 2010, and 2011, respectively.

East 179th Street Substation - This substation was placed in service in 1956 and supplies the Fordham network in the Bronx. This 51 year-old station is one of the area stations with outdoor switchgear and underground protection and control equipment. Being an outdoor substation, the weather has taken its toll on

the equipment as well as its wiring. The ultimate plan is to upgrade the entire 13kV switchgear, relay systems, and control wiring. A study to determine options as well as feasibility is scheduled to be completed in 2009. This is a multi-year replacement program starting in 2010. The funding for this project is $2.5 million in 2010 and $5 million in 2011.

Buchanan Area Substation - The Buchanan Substation is over 40 years old. The station was placed in service in 1960, and it is one of the area stations with outdoor switchgear and underground protection and control equipment. Being an outdoor substation, the weather has taken its toll on the equipment as well as its wiring. As a result, the Company has recently begun a multi-year program to upgrade the substation. The ultimate plan is to upgrade the entire 13 kV switchgear, relay system, and control wiring. The station was recently expanded, for load relief purposes, with the addition of a third section of switchgear. The third section is a double synbus arrangement; standard for all new substations, and space permitting, the intent is to replace the existing

1 two sections with a similar arrangement. A study to
2 evaluate the space availability and develop a
3 replacement plan is being undertaken in 2008.
4 The funding for this project is $10 million in 2011.
5 Q. Are there any other substations that will require
6 significant reliability upgrades?
7 A. Yes. The **East River Protection System Upgrade** project
8 will purchase and install a new state-of-the-art
9 microprocessor based automation system at the East
10 River 69kV Switching Station Substation. The new
11 system will perform operating, protective, and
12 monitoring functions for the 69kV circuit breakers,
13 transformers, phase angle regulators, feeders, and
14 buses. This system will include approximately 58 new
15 protective relay panels, a new operating console with
16 monitors, control and supervisory equipment, and all
17 associated peripheral and support systems including
18 batteries, chargers, local-remote communications and
19 station security. The new components will be installed
20 in the recently completed control room in the 69kV yard
21 at East River thereby completing relocation of all
22 operating, protective, and monitoring functions from

1 the 8th floor of the East River generating station.
2 The project will retire in place the existing
3 operating, control, and protective systems and devices,
4 currently located in the generating station control
5 room, terminal board room, and various relay rooms.
6 The benefits of this project are multiple. This project
7 will enhance system performance, improve operator
8 response time and productivity, and upgrade the
9 protection and control systems, thereby increasing
10 reliability. This project is being implemented over a
11 seven-year period with a 2012 service date. The funding
12 for the projects is $3.5 million in 2009 and in 2010,
13 and $3.1 million in 2011.
14 Q. Please describe the programs in the "Miscellaneous
15 Components" section of the "System and Component
16 Performance" category of Exhibit __ (IIP-2) associated
17 with enhancing reliability by the addition of other
18 equipment or upgrading existing equipment at multiple
19 substations stations.
20 A. There are three programs identified in this area: Area
21 Substation Reliability, Capacitor Cable Upgrade
22 Program, and Reinforced Ground Grid. Overall for these

1 programs, the Company plans to spend $14.0 million
2 annually in 2009, 2010, and 2011.
3 **The Area Substation Reliability Program and Autoground**
4 **Circuit Switchers** - Upgrading existing area substations
5 to meet present design philosophy will reduce the
6 possibility of loss of the area substation during a
7 protracted fault incident. This program provides for
8 the installation of two independent lines of protracted
9 fault protection with electrical and physical
10 separation for the area station transformers. The first
11 line of protection is provided by the installation of a
12 circuit switcher, which is tripped by normal primary
13 protection, and the second line of protection is
14 provided by an interrupter, which is tripped by a
15 separate and independent back-up protracted fault
16 protection system located in the transformer vault. If
17 space is a limitation, then the second line of
18 protection can be provided by a transfer trip relay
19 scheme.
20 The Auto Ground Switch (AGS) retirement program has
21 been combined with this reliability program, and where

1 feasible the retirement of the AGS will be performed
2 simultaneously.
3 The funding for this program is $10.5 million per year.
4 **Capacitor Cable Upgrade Program** - Approximately 47
5 capacitor banks, located at 23 different substations,
6 are connected to their supply switchgear with cables
7 rated for less than continuous (24 hour) operation.
8 With an increasing need to utilize these capacitors
9 around the clock in order to maintain suitable voltage
10 levels in the distribution system, the Capacitor Cable
11 Upgrade program has been developed to upgrade all
12 capacitor cable connections to provide unlimited
13 operating time periods. This is a multi-year project
14 which will upgrade two to three stations per year with
15 a funding level of $3 million annually in 2009 to 2011.
16 **Reinforced Ground Grid** - This program is installing a
17 reinforced ground grid at Astoria East Substation and
18 will address similar ground grid issues at other
19 substation facilities.
20 The reinforcement of the ground grids will be evaluated
21 on a station by station basis and may require the
22 installation of two (2) additional 1000 MCM ground

1 cables and ground rods parallel to existing 1000 MCM
2 ground cables. The actual geometry and number of rods
3 will depend on the particular station. The ground
4 cables will be connected to existing ground grid. All
5 new structures/equipment being installed in the yard
6 will be connected to the new 1000 MCM ground
7 conductors. In addition, existing structures/equipment
8 that have unresolved high grounding impedance
9 conditions and/or require an additional ground
10 connection will be connected to the new 1000 MCM ground
11 conductors.
12 Ground grid deficiencies are identified through the
13 Company's periodic ground impedance test program.
14 The funding for this program is $0.5 million annually
15 in 2009, 2010, and 2011.
16 Q. What other programs under the "Miscellaneous
17 Components" category in the "System and Component
18 Performance" section will you discuss next?
19 A. Next, we will discuss the programs associated with the
20 upkeep of the physical structures that house substation
21 facilities. Estimated costs for these programs are $14
22 million in each of 2009 and 2010 and $12.1 million in
23 2011.

1 **Roof Replacement** - The Company has an on-going program
2 to inspect each of the approximately 500 roofs once
3 every five years. The roof inspection program
4 proactively identifies roofs in need of repair so that
5 degraded conditions can be addressed in a timely
6 manner, thereby precluding major water intrusion. If
7 not prevented, water intrusion can and would result in
8 the inadvertent loss of equipment, thereby compromising
9 system reliability. Degraded roofs that have reached
10 the end of their service life and cannot be
11 economically repaired are replaced. The funding for
12 this program is $3 million in 2009 and 2010, and $2.1
13 million in 2011.
14 **Switchgear Enclosures Upgrade** - The switchgear cubicles
15 in a number of substations require upgrading. These
16 outdoor switchgear housings are typically about 40
17 years old and have been weathered by years of exposure
18 to the outside environment. The exterior doors no
19 longer close and seal correctly, subjecting system
20 equipment to the elements and adverse weather. The
21 upgraded enclosures will reduce weather intrusion
22 related trip outs, unscheduled outages, and erroneous

alarms. The funding for this program is $0.5 million in 2009, 2010, and 2011, respectively.

Corona Foundation Settlement - The Corona substation was constructed on reclaimed land, and many of the structures and buried facilities are settling, resulting in some damage to foundations, troughs, conduit, splice boxes and cable. This is a multi-year project to correct the station equipment settlement problems by the use of screw piles and foundation work. Several Corona substation settlement projects have already been successfully completed to correct settling of cable trenches and several pothead stands. Stabilization of additional pothead stands, using screw piles and foundation work, is still required. The funding for this project is $1 million annually in 2009 and 2010.

Facility Upgrades - This program funds facility improvements and upgrades at individual substations. Improvements addressed in this program include: relocating employees from temporary facilities (i.e. trailers) to permanent office areas and facility structural improvements related to: façade,

1 foundations, retaining walls, site drainage projects,
2 water supply projects, lifts, platforms, floors,
3 heating and ventilation, lighting, safety related
4 issues, and plumbing.
5 This program is required to fund larger scale projects
6 not covered by other capital programs. These projects
7 are necessary to correct and upgrade numerous age
8 related structural and facility issues in order to
9 ensure safe and reliable operation of the substations.
10 The funding for this program is $8 million in 2009,
11 2010, and 2011, respectively.
12 **Construct Relay House Enclosures** - Under this program,
13 the Company installs weatherproof enclosures to
14 preclude deterioration of the relay cabinets while
15 providing for safe inspection, maintenance, and repairs
16 under all weather conditions. Relays are usually
17 housed in a metal cabinet that is designed to be water-
18 tight and is installed either inside or outside a
19 substation building. When these metal cabinets are
20 exposed to weather, they will deteriorate with time.
21 In various substations, several of these exposed relay
22 cabinets have deteriorated and need to be addressed.

The funding for this project is $1.5 million in 2009, 2010, and 2011, respectively.

Q. What projects would you like to discuss next?

A. Three smaller projects, which will enhance substation performance through technology improvements to existing programs, are shown on Exhibit __ (IIP-2) under the "Miscellaneous Components" section of the "System and Component Performance" category. These three projects are estimated to cost $1.3 million, $0.7 million, and $0.7 million in 2009, 2010, and 2011, respectively.

Maximo Upgrade - The Maximo system is the backbone of Substation work management and is essential for efficient operation and maintenance. To protect Con Edison's network infrastructure from cyber intrusion, it is essential that virus signatures be updated and software patches be applied regularly. Since software patches are not available for unsupported software, software products in use must be maintained and supported by the vendor. The current version of Maximo will no longer be supported by the vendor. This project provides funding to upgrade Maximo to the latest version, which will be vendor supported. The

funding for this ongoing project is $0.4 million in 2009.

Rapid Restore System - This project, also a technology improvement effort, provides funding for enhancement to the Rapid Restore System. The Rapid Restore System was implemented to provide improved communication through a standardized computer application that provides an electronic means of downloading operating orders and work permits to the Substation Operators.

The system is installed and functional; however as is typical with the maturation of new applications such as this, there are many opportunities for improvement. A User group meets regularly with Information Resources (IR), and program enhancements, such as the ability to create operating order templates, have been identified that will be incorporated in 2008. Further enhancements resulting from continued use and experience with the system are anticipated as use of the system is expanded. The funding for this ongoing project is $0.2 million in 2009, 2010, and 2011, respectively.

Miscellaneous Technology Improvements - The implementation and upgrade of new technology is

1 instrumental for improving efficiency and reliability
2 in Substation Operations. This program serves to
3 identify and take advantage of opportunities to improve
4 the efficiency of these processes by implementing new
5 tools or upgrading existing ones to enhance how data is
6 collected, transferred, and/or stored. For 2008 and
7 2009, planned technology improvements include (1) Work
8 permit improvements: expansion of the electronic work
9 permit system to include mechanical and area work
10 permits, (2) Preventive Maintenance (PM) basis
11 database: establishment of a database to record the
12 technical basis for PM tasks and to ensure all PM
13 requirements in the work management system are
14 implemented, (3) Project prioritization: establishment
15 of a database to assign priority and track progress of
16 small capital projects, (4) PI data historian:
17 establishment of a database to capture, record, and
18 analyze system process data for the purpose of
19 providing enhanced equipment monitoring capabilities.
20 Future technology improvements include data integration
21 enhancements and upgrades to the work management
22 processes. Funding for these improvements is $0.7

1 million in 2009 and $0.5 million annually in 2010 and
2 2011.
3 Q. Are there any other "Miscellaneous Components"
4 projects/programs that you would like to discuss?
5 A. Yes, the **Small Capital Equipment** program is a generic
6 title for projects smaller in scope yet also important
7 to system reliability. In contrast to the Facility
8 Upgrade Program, which addresses improvements to the
9 substation yard and buildings, this program funds
10 equipment related improvements at the various
11 substations. Examples of the types of improvements
12 made under this program include: feeder pressure
13 alarms, station monitoring and control system
14 improvements, fire detection system upgrades, equipment
15 related enclosures and foundations, electrical testing
16 facilities, station light and power upgrades, and other
17 miscellaneous projects. This program is required to
18 fund small equipment related projects that are not
19 covered by other capital programs. These projects are
20 necessary to improve and maintain the integrity of
21 substation equipment. The cost of this program is

estimated at $4.0 million annually in 2009, 2010, and 2011.

System and Component Performance
Substations Operations O&M Programs

Q. Was the document entitled, "CONSOLIDATED EDISON COMPANY OF NEW YORK INC. - SUBSTATION OPERATIONS O&M PROGRAMS" prepared under your direction?

A. Yes, it was.

MARK FOR IDENTIFICATION AS EXHIBIT __ (IIP-3)

Q. What does Exhibit __ (IIP-3) show?

A. Exhibit (IIP-3) shows the O&M budget for Rate Year Ending (RYE) 2009 and the funding requirements through 2013 for Substation Operations (Switching Stations and Area Substations). Our testimony will discuss the O&M programs that require additional funding not included in the amount approved in the 2008 Electric Rate Order. As shown on Exhibit __ (IIP-3), of the six programs and normalizations listed under the Substations "System and Component Performance" category, Bus Enclosure, Corrective Maintenance Normalization, and Structural Integrity / Station Betterment are the only O&M programs that require supplemental funding to the previously approved programs / spending levels in this

category. The white paper exhibit describing these O&M programs is Exhibit __ (IIP-13). The O&M programs are described on pages 69 through 75 of that exhibit.

Q. Briefly describe Bus Enclosure program.

A. **Bus Enclosure** reliability program includes performing increased bus enclosure inspections as specified by Engineering on selected station phase bus to determine physical conditions. The scope of the work is for the preliminary testing to identify what sections have higher potential failure rates. Included in this inspection are cleaning and painting the interior of the bus enclosure, re-insulating the bus as required, re-silver plating bus connections, cleaning insulators, re-gasketing of bus enclosure plates, and adding breathers to prevent moisture build up. A water proofing application will be applied to prevent flashover.

Recent occurrences and station inspections have revealed an increase of water and moisture intrusion into the bus enclosures. Moisture ingress results in tracking across the bus insulation, rusting bolts, deteriorating silver plating on connections, the

aluminum enclosure corroding and spalling (which flakes off and is conductive), and insulators becoming contaminated. This program will improve system reliability, reduce potential interruption to customers, avoid potential personal injury and major damage to equipment, and avoid a negative environmental impact. Incremental funding of $0.498 million per year is required above the historical year spending to ensure a high level of reliability on the Transmission and Distribution system.

Q. Describe the Corrective Maintenance Normalization.

A. The **Corrective Maintenance** program provides for labor, vendor parts and services for corrective maintenance of substation equipment / structures. Maintenance functions to be performed in future rate years are as follows: transformer overhauls, type U bushing change-outs, transformer - gauges, indications, alarm panels, annunciator panels, throw over switches, diverters, fans, deluge systems, circuit breaker gauges, racking mechanisms, auxiliary switches, control cabinet heaters, air leaks, PTZ devices. cubicle-shutters, racking, OSHA ground studs, mimic panel, Remote

1 Monitoring System (RMS) coils, disconnect switch - hot
2 spots, alignment of fingers, jaws, and blades, spring
3 tension, lubrication, oxidation, electrical and manual
4 motor operations. These maintenance resources are
5 normalization to the historic year which represent a
6 return to O&M from Capital in the future Rate Years.
7 The 2007 actual O&M expenditures were understated by
8 $1.4 million related to a shift from this activity of
9 maintenance labor and material costs required to
10 support higher priority capital work.
11 These maintenance resources are required to maintain
12 our continued high level of equipment availability and
13 reduce facility maintenance backlogs to a manageable
14 level to ensure the continued long-term reliability of
15 the transmission and distribution systems. In
16 addition, Substation Operations currently has ninety-
17 seven facilities that require dedicated maintenance to
18 address our aging infrastructure and ensure a safe and
19 productive working environment. The incremental $1.4
20 million funding per year, is required to meet our
21 future system needs.
22 Q. Briefly describe the incremental funding requirements
23 for Substations O&M program Structural

Integrity/Station Betterment.

A. The **Structural Integrity/Station Betterment** program includes various station betterment programs to address structural conditions requiring repair. Incremental funding of $0.475 million in Rate Year 2010 and $0.320 million in Rate Year 2011, is required to meet our future Substation needs.

Q. Briefly describe the program details that are incorporated in this incremental funding request for Structural Integrity/Station Betterment.

A. There is one additional component to this previously approved Rate Case program:

Structural - 13th Street Elevated support - The maintenance of the elevated support structure at East 13th Street substation facility is required to ensure the integrity of this facility and to reduce future maintenance costs through timely repairs.

Q. What criteria were used to determine the additional requirements for this Structural Integrity/Station Betterment initiative?

A. Station inspections have revealed significant degradation of the East 13th Street Station elevated

support structure. The intent of this program is to return the facility structural integrity to its original-material condition to ensure a high level of substation reliability.

Q. Does this conclude your testimony regarding Substation Operations O&M programs for improving system reliability?

A. Yes.

System and Component Performance
System and Transmission Operations Capital Programs

Q. What are the Company's plans for improving the reliability of the transmission system?

A. The capital programs, listed in Exhibit __ (IIP-4) under "System and Component Performance," maintain or improve the reliability of the transmission system. These include the Feeder Replacement Program, the System Reliability Program and the Transmission Feeder Failure Replacement Program. The white paper exhibit describing the System and Transmission Operations' System and Component Performance capital and O&M programs and projects is titled "System and Component Performance - System and Transmission Operations." The capital projects are described on pages 2 through 25 of

that exhibit.

MARK FOR IDENTIFICATION AS EXHIBIT __ (IIP-14)

Q. Please discuss the "Feeder Replacement Program."

A. The long-term objective of the **Feeder Replacement Program** is to replace or refurbish, in an orderly manner, the overhead and underground feeders, which because of age and/or performance are now experiencing operational problems.

Feeder replacements must be planned in advance and in a programmatic manner to reduce the potential for unmanageable sequential failures. Replacing a feeder requires extensive outage time and, therefore, must be carefully scheduled in advance during periods when there is minimal impact on overall system reliability. Based on these considerations and limitations, the capital program includes the replacement or refurbishment of seven transmission feeders. These feeder replacements will be initiated over the next three years as are shown on Exhibit __ (IIP-4).

Q. Describe the Transmission feeder replacement projects targeted to System and Component Performance.

A. **Sprain Brook - West 49th Street Feeder M51** - Feeder M51 has experienced 6 cable failures since 1999. Four of these failures occurred on cable sections and are attributed to thermo-mechanical bending (TMB). Currently, no reliable and proven technique is available to determine whether or not this failure trend will continue, and the Company is seeking such a technique by developing computer software for Feeder Dynamic Modeling and Simulation. The scope of this project entails the continued development of the computer software for Feeder Dynamic Modeling and Simulation and the replacement of one or more targeted sections (i.e., cable located between manholes) of cable on Feeder M51 for examination. The sections selected will be based on the results of dynamic simulation software.

The results of the simulation will be compared to historical failures for purposes of verifying the model. If successful, the model will be used to rank all sections of feeder M51 relative to the possibility of future failures. The section identified as being the most prone to a potential future failure will then

be removed for inspection. The inspection of the removed section will aid in verifying the accuracy of the simulation program and provide a sample to make a qualitative assessment of the condition of the feeder. The cable replacement is scheduled to begin November of 2008 and continue through 2010. If further software modifications are required, the selection of the replacement sections will be more random in nature, with a focus on removing Anaconda cable, which has experienced recent failures. The removed sections will be examined in the field for abnormality, particularly for signs of thermo mechanical bending (TMB) development. Following the field examination, several samples of the cable will be selected for detailed laboratory dissection and analysis. In addition to aiding the development of the dynamic simulation software, the analysis of the removed sections will be used to study whether there is a generic problem with this cable type on Feeder M51.

The funding for this program is $6.7 million in 2009 and 2010, respectively.

Replace 69M43/69M44 with 38M53 & 38M54: This project

will replace the two existing 69kV, 350 kcmil three-conductor, low-pressure fluid-filled double-circuit cables with 138kV solid dielectric insulated cables. These feeders connect the East 13th Street Switching Substation to the Cherry Street Area Substation. The new feeders will consist of approximately 2 miles of new duct bank installed along a different route than the existing feeders. The related equipment at both substations will be upgraded or replaced to 138kV. The first feeder and related substation equipment will be placed in service in May of 2008; all of the non-outage cable installation has been completed on the second feeder. The outage work is scheduled to begin in the fall of 2008 and the second feeder will be placed in service in the spring of 2009. The funding for this ongoing program is $3 million in 2009.

Replace 138kV Feeders 18001 & 18002 - These pipe-type feeders were energized in 1949 and are among the oldest cables on our system. There have been 14 dielectric fluid leaks on these feeders, several of which have resulted in significant release of dielectric fluid. In addition, there have been a total of thirteen

failures on these two feeders - five on Feeder 18001 and eight on Feeder 18002. Considering the age of these feeders, and the environmental impact of potential leaks, these feeders have been chosen for replacement with solid dielectric cable.

To minimize installation costs and complications associated with obtaining a new feeder route, the new solid dielectric cables will re-utilize the existing steel pipes as conduits after removal of the old HPFF pipe-type cables. The new solid dielectric cable installation will also require the removal of some old manholes and the installation of new manholes for each of the two parallel feeders.

Work on Feeders 18001 and 18002 will take place sequentially so that only one feeder is out of service at any time. This system reinforcement project will result in reliability enhancement and the elimination of potential dielectric fluid leaks. Funding for this program is $21 million, $30 million and $20 million in 2009, 2010, and 2011, respectively.

Feeders 69M41 and 69M45 - These feeders are high-pressure fluid-filled pipe-type 69 kV feeders

connecting E 13th St. Switching Substation to Cherry St. Area Substation. The feeders have been in service since the early 1950's and are among the oldest feeders in the Con Edison Transmission System. Although these feeders have had few leaks, there are areas of Feeder 69M41 where, if a leak were to occur, it would require a major undertaking to repair. These are the sections under the FDR Drive where the feeder pipe is directly buried in the roadbed. Taking this into consideration, as well as the more than 55 years of service and the fact that the 5" pipes cannot be re-conductored with solid dielectric cables, the Company plans to replace the feeders with solid dielectric cables in a new Fiberglass Reinforced Epoxy (FRE) concrete duct bank.

Reliability will be enhanced by the elimination of potential dielectric fluid leaks and the reduction of cable failures. The feeders will be re-conductored with 138 kV cabling to permit future conversion. The funding for this project is $6 million in 2011.

Reconductor Dunwoodie to Sprainbrook Transmission Corridor - This project will replace the compression

fittings and conductor on overhead 138kV feeders 99941 and 99942 on the E Line between Dunwoodie and Sprain Brook substations and replace the compression fittings and conductor on 345kV feeders 75L and 75M on the K line between Dunwoodie and Sprain Brook substations. Feeders 99941 and 99942 consist of single-wire bundle 2156 MCM ACSR (aluminum conductor steel reinforced), and feeders 75L and 75M consist of double-bundle 795 MCM ACSR. Each of the 138kV feeders, which are approximately 1.5 miles in length, was installed in 1965. Significant problems with compression fittings have surfaced on these feeders. Three dead-end fittings operating at high temperatures and detected by thermographic inspection were replaced in 2006. Subsequent testing at The National Electric Energy Testing, Research and Applications Center (NEETRAC) indicated that the fittings were either at end-of-life or could reasonably be expected to be at end-of-life in the near future. Engineering has evaluated both lines and has recommended that the supply conductors be replaced because of problems with the fittings and the relatively short length of each feeder.

The use of a new, high temperature, high capacity ACSS (aluminum conductor steel supported) conductor will be evaluated as a possible replacement for the existing conductor. This would be the first use of ACSS on Con Edison's system. ACSS may have future applications to address lower sag, higher temperatures, and/or higher capacity, and experience with it will be valuable. In addition to replacing the conductors, shield wire, fittings, insulators and support hardware will be replaced. The funding for this project is $1.5 million in 2009, and $4 million in 2010 and 2011, respectively.

Replace 69kV Feeders on the Queens Borough Bridge (QBB) - This project involves the replacement of six 69kV, high-pressure gas-filled (HPGF) feeders with solid dielectric cable on the QBB between Manhattan and Queens. The six feeders(69kV feeders 69M01-69M06) consist of high-pressure gas-filled cables in pipes which are physically located under both outer roadways of the Queensboro Bridge - three feeders under the northern outer roadway and three feeders under the southern outer roadway. Corrosion of the pipes has resulted in a number of leaks over the years.

1 Accessing the pipes on the bridge for repairs is
2 difficult and in some instances has prevented repairs
3 altogether. Although pipes of these feeders have been
4 repaired in the past, some leaks remain due to the
5 extensive corrosion of the pipes. Areas of on-going
6 corrosion activity could further breach the pipe wall
7 and accelerate the leak rate to the point where feeder
8 reliability could be affected.
9 The scope includes the removal of the existing pipes
10 and cables and installation of new pipes on the bridge
11 and up the bridge risers, installation of new solid
12 dielectric cables across the bridge span and up the
13 risers, installation of cable anchor joints on top of
14 both piers, and the installation of transition joints
15 on each side of the bridge near the base to make the
16 connection between solid dielectric and gas-filled
17 cables. The current plan is to replace the first two
18 of the six feeders by December 2012. Options for the
19 replacement of the remaining four feeders, including
20 replacement of the bridge portion and possibly complete
21 land section, will be subsequently evaluated to
22 determine the best option. This system enhancement

1 project is funded at $3 million in 2010, and $14
2 million in 2011.
3 **Feeders 34182/4** - These pipe-type feeders were
4 energized in 1949 and are among the oldest cables on
5 our system. Considering the age of these feeders, and
6 the environmental impact of potential leaks, these
7 feeders have been identified for replacement with solid
8 dielectric cable. To minimize installation costs and
9 complications associated with obtaining a new feeder
10 route, the new solid dielectric cables will re-utilize
11 the existing steel pipes as conduits after removal of
12 the old HPFF (High Pressure Fluid Filled) pipe-type
13 cables. The new solid dielectric cable installation
14 will also require the removal of some old manholes and
15 the installation of new manholes for each of the two
16 parallel feeders.
17 Work on Feeders 34182 & 34184 will be performed
18 sequentially so that only one feeder is out of service
19 at any time. This reliability enhancement project will
20 contribute towards the elimination of potential
21 dielectric fluid leaks. This system enhancement
22 project is funded at $5 million in 2011.

Feeders 38R51 and 38R52 are 138kV medium-pressure dielectric fluid-filled feeders connecting the Fresh Kills Substation to the Wainwright Substation. Wainwright Substation is a two bank area station and the loss of either feeder places the station in a system contingency condition. The feeders to the Wainwright Substation are direct buried, share a common trench and are susceptible to third party dig-ins. Damage to both cables in the trench could potentially cause the loss of the Wainwright Substation and approximately 25,000 customers.

This system reliability project focuses on the mitigation of potential cable damage caused by outside parties that could result in a failure and possible loss of the Wainwright Substation. The project will install fiberglass reinforced pipes and concrete-encased duct bank from the West Shore Expressway to the Wainwright Substation. The plan in the event of a system contingency would be to expedite the replacement of the fluid-filled, pressurized cables by installing new solid dielectric cables into the manhole duct bank constructed under this project and connecting them to

existing feeders. This project is funded at $4 million in 2011.

Q. Please describe the "Emergent Transmission Reliability" Program, as shown on Exhibit __ (IIP-4).

A. The Emergent Transmission Reliability Program complements the Feeder Replacement Program by addressing feeders that have experienced operational problems. The growing level of feeder failures over the past several years highlights the importance of addressing reliability issues within the transmission system. From 1999-2007, of the 61 repair efforts, a total of 25 repairs have been extensive enough to require capitalization. This program will provide funding to address emergent reliability issues impacting transmission system reliability. This program will be utilized to fund projects such as the recent pothead to pothead re-conductoring of feeder 99032. This project included re-conductoring 8 circuit miles of cable at an $8.8 million capital expenditure. This program will function to fund emergent reliability efforts and supplement the Feeder Failure program. The project is funded at $10 million annually from 2009 to 2011.

1 Q. What other projects are included as part of the "System
2 and Component Performance" for Transmission Operations?
3 A. The other projects address installation of pressure
4 alarms at selected terminations that do not have a
5 pressure alarm; construction of Feeder M29 and the
6 Academy Substation; reinforcement of the Hudson River
7 Crossing Towers; upgrade of the Overhead 345kV
8 Transmission Structures; and the Staten Island M-Line
9 Tower Relocation.
10 Q. Please discuss the construction of Feeder M29 and the
11 Academy Substation.
12 A. The objective of this project is to install a new 345kV
13 feeder, known as "M29", from the Sprain Brook 345kV
14 Substation to the Sherman Creek Switching Station via
15 the new Academy 345kV substation. The M29 project
16 consists of a 500 MW, 345kV underground fluid-filled
17 pipe-type cable, approximately 9.5 miles long that
18 extends from Sprain Brook in Westchester to northern
19 Manhattan. The new Academy substation will be
20 constructed on the former generating station site
21 adjacent to the Sherman Creek 138kV Substation.
22 Interconnection at Sprain Brook is to be effected by
23 terminating M29 into an available position in Bay #2,

where it will be bounded to the north by the existing center breaker RNS2 (separating it from Feeder Y49), and to the south by two new 63kA breakers separating it from the south sync-bus. The Sherman Creek 138kV Substation currently consists of two ring buses, an East and a West ring, joined by a short cable and breaker. The interconnection scheme at Sherman Creek provides for bifurcation of M29 to avoid a single point of injection into the 138kV Substation. For enhanced reliability and ease of maintenance, each leg will be separated from the main 345kV feeder via a 345kV breaker and terminated into a separate ring bus through a 345/138kV autotransformer in series with a 138kV phase angle regulator (PAR). The autotransformers, PARs, and GIS (Gas Insulated Station) with two 63kA breakers will be installed at the new Academy Substation, which will be constructed at the former Sherman Creek generating station south of the Sherman Creek Switching Station, to accommodate feeder terminations. The justification for this program includes the critical importance of the In-City supply. The East 179th Street load area is that part of the Con Edison In-City system supplying the Bronx and Upper

1 Manhattan area substations, whose aggregate summer peak
2 load demand approaches 1250 MW over the ten-year period
3 beginning 2005. Currently the East 179th Street area
4 is a single contingency design. However, reliability
5 studies have shown that transmission feeders in the
6 area would be overloaded above normal ratings following
7 the contingency loss of Feeder X28, the largest
8 transmission feeder into the area, which emanates from
9 Sprain Brook. Until a permanent solution is engineered
10 and implemented, operational protocols are in effect to
11 mitigate these overloads, and maintain reliability.
12 Feeder M29 will provide sufficient additional
13 transmission capacity to the East 179th load area to
14 satisfy its single contingency design requirement and
15 will provide additional margin to approach second
16 contingency design capability over the next ten years.
17 As compared to other potential transmission solutions,
18 Feeder M29 directly benefits Sherman Creek by providing
19 the local area station with an additional supply
20 source. Without M29, future load growth could easily
21 absorb the small margin above second contingency
22 capability currently afforded by this particular
23 station. The installation of Feeder M29 will ensure

1 that Sherman Creek has sufficient margin to maintain
2 close to second contingency capability in the long
3 term. Feeder M29 will also benefit the Dunwoodie North
4 load area, an area electrically interconnected to the
5 East 179th Street that is also projected to have a
6 significant load growth. M29 would elevate Dunwoodie
7 North's current single contingency design capability to
8 a second contingency capability beyond the ten-year
9 planning horizon.
10 Feeder M29 by virtue of its origination at Sprain Brook
11 (outside of the In-City System) and termination at
12 Sherman Creek (located within the In-City System
13 electrical boundary), will become part of the New York
14 City Cable interface, thus increasing overall transfer
15 capacity into New York City by approximately 350 MW.
16 This increase in transfer capacity will enhance the
17 reliability of the overall In-City System.
18 The PSC issued the Article VII Certificate, and
19 approved construction of Academy and Sprainbrook in
20 August 2007. The Commission's approvals of the 9.5 mile
21 transmission route and tunnel were issued in December
22 2007 and April 2008, respectively. Construction of the
23 Academy 345 kV Substation began on November 5, 2007.

1 Construction of the transmission in Manhattan and the
2 Bronx began on March 24, 2008. Construction in the
3 Sprainbrook Substation and construction of transmission
4 in the City of Yonkers and the tunnel is expected to
5 begin in July 2008. The funding forecast for this
6 project is $130 million in 2009, $75 million in 2010
7 and $15 million in 2011.
8 Q. Please describe the project entitled **"Transmission**
9 **Feeder Failures"** shown in the System and Component
10 Performance section of Exhibit __ (IIP-4).
11 A. Generally, funding for most feeder failure repairs is
12 provided for in the Company's O&M program. However,
13 when the failure is extensive enough to require a
14 complete cable section replacement (i.e., between
15 manholes), or if the failure includes the replacement
16 of feeder potheads, the repair cost is covered through
17 the capital program. Based on failure data, we expect
18 to replace and capitalize two feeder failures per year.
19 Considering that an average cost of repairing a major
20 failure is about $2.5 million, this program is funded
21 for $5 million per year.

Q. Please describe the project entitled **"Reinforce Hudson River Crossing Towers"** shown on Exhibit __ (IIP-4).

A. The 473 foot tall towers supporting the Hudson River crossing of the PJM Power Pool ties, 345kV feeders Y88 and Y94, have been evaluated using the latest analytical tools and determined to be stressed under certain conditions. The project involves installing additional structural steel members to increase the strength of these towers and will cost $3 million in 2009, $2.4 million in 2010 and $1.8 million in 2011.

Q. Are there any other projects shown on Exhibit_ (IIP-4) under System and Component Performance that you would like to discuss?

A. Yes. Two programs Upgrade Overhead 345 kV Transmission Structure and Staten Island - M-Line Tower Relocation.

Q. Please continue.

A. The **Upgrade Overhead 345 kV Transmission Structure** project - This project provides for upgrades on specific 345 kV steel lattice towers selected based on engineering analysis. The reinforcement of these towers will decrease the likelihood of tower failure during weather events or terrorist acts. In

1 addition, selective reinforcement, particularly on
2 towers supporting the six 345kV lines south of
3 Millwood Substation, will serve to decrease the
4 possibility of a failure at one tower causing
5 cascading failures at adjacent towers on these
6 critical lines. Work will initially start on the
7 lines that contain the most dead-end type structures
8 so that they may be converted to a self-supporting
9 structure.
10 Upgrading existing structures will reduce potential
11 tower failures, thus reducing operating constraints and
12 improving reliability. While Con Edison has eight
13 single circuit guyed aluminum lattice structures
14 available for emergency use following the loss of a
15 tower or multiple towers, these may not be sufficient
16 in a weather event or terrorist event where many double
17 circuit structures could be damaged. Through selective
18 reinforcement of towers, this project will decrease the
19 likelihood and impact of multiple failures resulting
20 from cascading since reinforced towers are better able
21 to withstand the loads that would result from adjacent
22 tower failure. Funding levels are $2.1 million, $2.2

1 million, and $2.3 million in 2009, 2010, and 2011
2 respectively.
3 **Staten Island-M-Line Tower Relocation** - As the result
4 of construction of a railroad spur for a concrete yard,
5 the two outer phases of Feeder 22 must be raised with a
6 new transmission structure. The conductors must be also
7 raised to comply with National Electric Safety Code and
8 to permit 20' high trains to pass. The installation
9 costs include special site requirements involving the
10 existing operational railroad and tidal wetland
11 restrictions. The property is owned by the City of New
12 York, and Con Edison is a tenant on the NYC property.
13 Con Edison has sent correspondence to NYC indicating
14 that these construction costs are the responsibility of
15 the owner. To the extent reimbursement is not
16 obtainable, the funding for this project is $1.5
17 million annually in 2009 and 2010.
18 **System and Component Performance**
19 **System and Transmission Operations O&M Programs**
20
21 Q. Please identify the document entitled, "CONSOLIDATED
22 EDISON COMPANY OF NEW YORK INC. - SYSTEM & TRANSMISSION
23 OPERATIONS O&M PROGRAMS."
24 A. The document shows the O&M budget for Rate Year Ending

(RYE) 2009 and the funding requirements through 2013 for System Operations.

Q. Was that document was prepared under your direction?

A. Yes, it was.

MARK FOR IDENTIFICATION AS EXHIBIT __ (IIP-5)

Q. Please generally describe Exhibit __ (IIP-5).

A. The list includes: approved programs from the 2008 filing that have no spending in the historical year (2007); "established" programs requesting additional funding; and "new" programs being introduced in the current filing.

Q. Please describe the "established" and "new" programs listed in Exhibit __ (IIP-5) under "System and Component Performance."

A. The "established" and "new" programs listed in Exhibit __ (IIP-5) under "System and Component Performance" are described below. Pages 26 through 37 of white paper Exhibit __ (IIP-14) describe the System and Transmission Operations System and Component Performance O&M programs in additional detail.

Feeder Emergencies - This program addresses two types of feeder emergencies: Failure Repairs and Leak

Repairs. Failure Repairs are required to restore transmission feeders which have failed. Failures can be at the joint, on a section of cable, or at the pothead. Repairs can include a new joint, a buried joint(s), or an insert.

Leak Repairs address leaks on underground high pressure pipe type feeders. Leaks may be in a manhole, on buried feeder pipes, return lines and/or at risers/potheads.

Prompt repairs to failed feeders are required to ensure system reliability. Dielectric fluid which leaks from the high pressure pipe type feeder system must be remediated promptly and in accordance with the standards and guidelines of the regulatory agencies, to ensure compliance and minimize the impact on the public and the environment. The funding for RYE 2010 is $7.826 million, and is based on a three year average.

Coating Refurbishment - This proactive program will reduce dielectric fluid leaks and increase the availability of transmission feeders. Based on past dielectric fluid leak history, sections of feeder pipe that have been identified to have deteriorated will be

excavated and refurbished. This program has resulted in a reduction of the number of leaks in the sections of pipe which have been refurbished.

This is an environmental and reliability program. By addressing corrosion issues before the pipe leaks, we are able to reduce the amount of dielectric fluid that is lost in the environment. We also reduce the probability that the feeder will need to be removed from service or fail due to an oil leak caused by corrosion on the pipe.

Over the past three years, we have completed an average of 500 trench feet. Our plan is to accelerate the program to complete 750 trench feet per year on Feeders M51 and M52. Requested funding is based upon a plan of refurbishing approximately 750 trench feet annually at a three-year average cost per trench foot of $2,000. The unit cost varies based on the condition and number of pipes in the excavation. Funding is $1.5 million annually for the rate years ending in 2010 to 2013.

ECC Trainer / Compliance Monitor Position - This program will strengthen the training efforts at the Energy Control Center (ECC) by adding a training

position in order to meet the current needs of the operators of the bulk power system. This position will also be responsible for enhancing compliance monitoring. Continuing education and training for the staff and operators at the ECC is essential to providing reliable service to our customers. Currently, two trainers provide training to the operators at the ECC - one for district operations and another for the bulk power operations. While the district operations trainer is responsible for a single functional position, the bulk power trainer is responsible for five different functional positions, making it a challenge for a single trainer to provide training effectively. In addition, no programmatic training is provided for the Central Information Group (CIG) positions. Accordingly, an additional trainer is needed to provide support to the bulk power operations, and to provide basic refresher training to the CIG. Several changes have made the need for this trainer critical at this juncture including:

- The new Electric Reliability Organization, NERC, is requiring that those entities that can affect the

bulk power interconnection implement a systematic approach to training. NERC certification is becoming mandatory, and the necessary training must be established and conducted annually to provide the continuing education hours to maintain operator certification.

- Following the 2003 blackout, NERC and NPCC have undertaken programs whereby they conduct evaluations and audits to ensure readiness and compliance with NERC standards. Training is a major area of focus for these evaluations.
- The changing workforce makeup is resulting in newer and less experienced workers being available to fill staff and operating positions. This "greener" workforce requires more entry level and ongoing training to effectively support the organization's needs.

The funding for a new training position is $.125 million in the rate year.

Normalized Human Resources - Due to temporary assignments to capital projects and, retirements and delayed hiring, various positions in System and

1 Transmission Operations were unfilled at the end of the
2 historic year. These are all required positions and
3 will be filled by year end 2008. All of the positions
4 requested were previously in the 2008 filing, are
5 required to bring the departments back to normal human
6 resource levels, and support the organization's current
7 work plan. Some of the positions have been filled in
8 the first quarter of 2008, with the remaining positions
9 to be filled by the end of 2008. This normalization
10 change also reflects $0.9 million of non-recurring
11 capital work which was performed in the historic year
12 during the installation of the new EMS system. Funding
13 of the capital work and the vacant positions equate to
14 an increase in the historic year expenditures by $2.322
15 million.
16 Q. Does this conclude your testimony regarding
17 Transmission Operations' projects related to System and
18 Component Performance?
19 A. Yes.
20 **System and Component Performance**
21 **Electric Operations Capital Programs**
22
23 Q. What is Con Edison's strategy for enhancing the
24 performance of the distribution system, and the

1 associated components, that directly support improving
2 reliability?
3 A. The Con Edison electric distribution System is one of
4 the most reliable in the world. The programs and
5 projects in this category directly support maintaining
6 and improving reliability to both our underground and
7 overhead distribution systems. Even though our
8 reliability currently far exceeds the national average,
9 we continue to strive to surpass our reliability goals
10 since the impact of the loss of electricity is
11 significant to the customers that rely on our energy to
12 run their businesses and their homes. Despite this
13 high level of overall performance, we need to improve
14 in a number of areas. In the overhead system, our
15 customers and other stakeholders expect a higher level
16 of performance during storms. This includes reducing
17 the number of customers affected, reducing the
18 restoration time, and communicating effectively.
19 Overall on the network system our customers experience
20 high levels of reliability performance; far superior
21 than anywhere in the country. Despite this high level
22 of reliability, the issue with the network systems is
23 that they supply large numbers of critical customers

and infrastructure and any outage has significant consequences. The main reliability concern is a major event as a result of multiple supply failures. Although, such events occur infrequently, they result in significant negative impact to customers and distort perceptions of the Company's high overall reliability. Our programs, therefore, are targeted to reduce the probability of a major network failure or shutdown. Based on recent events like hurricanes, floods, and other types of disasters, we have seen that our distribution system is vulnerable. Con Edison's System and Component Performance programs support our readiness to respond when large, as well as small, events occur. The programs necessary to achieve this goal may vary from load area to load area (network or overhead). Con Edison will examine each load area to see how it can best ensure optimal reliability and make improvements.

System and Component Performance programs target:

- Infrastructure improvements
- Restoration of failed components
- Pro-active work on poorer performing components

- Improved response times for storms

Q Please describe the Company's network reliability improvement strategy

A. The Company understands that it is essential to continue to improve the reliability of the network distribution system to ensure future long term reliable operation and service continuity for our customers. As a result the Company has developed a network reliability improvement strategy. This strategy has resulted in a 10-year distribution network reliability program.

Q. How often will Con Edison update this program?

A. Con Edison updates this program every year following each new network load forecast which is based on the summer experience. This iterative process provides an update that is issued prior to end of each year.

Q. Please describe some of the key factors that affect distributed network reliability.

A. Key factors that affect distribution network reliability are:

- Primary feeder and component loads
- Feeder operational performance history

- The length and number of connected components of each feeder
- Feeder cable composition type and age
- Splice and joint type and age
- The amount of load shifted to companion feeders during feeder outages
- Component failure rates as a function of operating temperature
- High potential testing results
- Structure heat rejection
- Number of available sectionalizing switches on the feeders
- Number of primary feeders

Q. Please describe how these factors are used to determine the reliability of a distribution network?

A. Since 1999 the company has made considerable effort in identifying the contribution of the factors that affect the reliability of a distributed network. Utilizing statistical analytical models, a network reliability index (NRI) for each network is developed each year for each network. The NRI has been used for several years

to provide a relative order of reliability for each of the company's 59 networks.

The NRI is the result of a probability analysis of the key factors. This sophisticated analysis produces a distribution of probabilities that model a network's susceptibility to a major outage caused by component failures within a network system. The networks can then be ranked, relatively, with the Network Reliability Index (NRI).

Q. What is the basis for the development of the ten year network reliability Improvement strategy?

A. Following the Long Island City event of 2006, a study was conducted to determine the design factors that will improve the reliable of our networks.

Q. What were the study's conclusions?

A. The study concluded that reliability can be improved by modifying several design factors:

- Reducing feeder lengths,
- Limiting the peak load of a network'
- Limiting the peak feeder loads.

The study assumed that the Company would continue to replace poor performing feeder components and restore feeders as rapidly as possible.

Based on the study, the Company developed a long-term network reliability strategy and target to improve network reliability to an NRI that approaches a one in twenty years susceptibility of a major distribution network outage. It was also concluded that significant network reliability improvement can be achieved with an optimization of the Company's existing improvement programs.

Q. How does the Company intend to proceed with the improvement strategy?

A. The Company, in its 2008 rate filing, included various reliability projects for improving its networks to achieve, this target in a programmatic manner.

Q. Describe the Company's strategy to achieve this target.

A. Annually, following the summer period, the Company will update the NRI and provide a ranked list. This listing of networks is in order of susceptibility and is used to update the strategy for achieving improvement for those networks with the highest susceptibility. The

1 networks will be grouped into high, medium, and low
2 ranked groups.
3 Q. What strategies will be employed to improve the
4 reliability of the most susceptible network group?
5 A. The basic strategy that will be utilized is:
6 1. Splitting large networks
7 When planning new substation construction, based
8 upon the Area Substation Load Relief, methods to
9 split large networks will be analyzed in order to
10 meet the objective of the program.
11 2. De-bifurcate or add feeders
12 Existing stations that have the availability of
13 spare breaker compartments will be utilized to split
14 or add feeders to reduce the number of connected
15 components on each feeder.
16 3. Install sectionalizing switches
17 At substations where spare breaker positions are not
18 available, underground sectionalizing switches may
19 be installed on bifurcated feeders. This will permit
20 the isolating the faulted portions of the feeder and
21 enable restoration of the unaffected portion.
22 4. Install sectionalizing switches on long feeders or
23 large spurs

On long feeders, underground sectionalizing switches may be installed to enable disconnection of a failed portion and restoration of the unaffected portion.

5. Programmatically replace lower performing cable

The Company has an ongoing commitment to replace paper insulated cables and associated joints by the year 2020. The most susceptible networks and feeders are prioritized for replacement.

6. Replace thermally sensitive stop joints

The Company has identified a specific type of stop joints that is heat sensitive. These thermally sensitive joints have been targeted for replacement.

7. Network Transformer replacements

The Company will continue to replace highly loaded network transformers based on highest priorities in all networks. In addition, it will continue to remove transformers that, on inspection, are found to have excessive corrosion or other indications of potential problems.

Q. Please provide an overview of the Electric Operations programs and projects listed in Exhibit __ (IIP-6) under "System and Component Performance."

A. The category "System and Component Performance" in

Exhibit __ (IIP-6) includes many specific programs and projects to maintain and improve distribution system reliability. We will describe each in our following testimony. The white paper exhibit describing the Electric Operations System and Component Performance capital and O&M programs is titled "System and Component Performance - Electric Operations." The capital projects are described on pages 2 through 37 of that exhibit.

MARK FOR IDENTIFICATION AS EXHIBIT __ (IIP-15)

Q. Please begin your description of Electric Operations System and Component Performance programs and projects beginning with the "Emergency Primary Cable Replacement" program.

A. **Emergency Primary Cable Replacement (Feeder Open Auto)** over the course of any given year, we replace cable due to feeder faults and transformer replacements. Feeders that "open auto" as a result of cable and joint failures, or even contractor damages, must be repaired as soon as possible to maintain network system reliability. We want to limit the possibility of multiple feeder contingencies, especially during high

1 load periods. Our goal is to restore a feeder to
2 service, safely and as rapidly as possible
3 This ongoing program will be funded for $56 million
4 annually in 2009 and 2010, and $54 million in 2011.
5 **Emergency Overhead Repairs** - This program replaces
6 poles, primary and secondary cable, services and
7 equipment associated with emergency repairs of the
8 overhead system including storm repairs. This ongoing
9 program will be funded for $14.3 million annually in
10 2009, 2010 and 2011.
11 **Emergency Service Replacements**
12 Service cables and conduits are the final connection
13 between our distribution system and our customers'
14 premises. These facilities provide our customers with
15 the electric power they require for their homes and
16 businesses. At times when these services fail, we must
17 replace rather than repair them. This capital program
18 includes the permanent installation of new service
19 cable and associated conduit where necessary. Service
20 repairs that do not include the replacement of the
21 entire service cable, miscellaneous repairs, and
22 provisions for temporary service are not included in

1 capital program and are considered O&M. This ongoing
2 program will be funded for $20 million in 2009, 2010,
3 and 2011 respectively.
4 **Street Light Repairs** - Street lights have become an
5 increasingly important public safety concern for the
6 New York City Department of Transportation and
7 Westchester municipalities. This program replaces
8 electric service cable and associated conduit when
9 necessary to restore service to street lights. This
10 ongoing program will be funded for $15 million annually
11 in 2009 and 2010 and $14.7 million in 2011.
12 **Transformer Installation** - This program replaces
13 defective overhead, URD and underground network
14 transformers that require immediate replacement to
15 avoid failure.
16 To enhance public safety and maintain reliability, we
17 have an aggressive underground transformer inspection
18 program which includes testing for dissolved gas in oil
19 units as part of a five-year inspection cycle. As a
20 result of these increased monitoring measures, we are
21 identifying an increased number of transformers that
22 require pro-active replacement before failure. This

1 ongoing program will be funded for $22.6 million in
2 2009 and $21.1 million annually in 2010 and 2011.
3 **Primary Cable Crossings** - The Company will install new
4 conduit systems for the primary distribution feeders
5 that supply the Riverdale and Flushing Networks. The
6 Riverdale Network is supplied from the Sherman Creek
7 Substation and the Flushing Network is supplied by the
8 Corona No. 1 Substation. The feeders from these
9 substations cross waterways and major highways. The
10 new conduits will act as spares, ready and available
11 for use in the event of a feeder fault. Having spare
12 conduits in place will allow us to expedite feeder
13 repairs and restoration and reduce the potential for
14 cascading feeder outages during peal demand periods.
15 This program will be funded for $8 million in 2009,
16 2010, and 2011.
17 **The Hipot Program** - High-voltage testing of targeted
18 feeders is a proven diagnostic reliability tool for the
19 mitigation of summer network feeder outages. This
20 program is implemented annually from October 1 through
21 May 31 and consists of three major stages: (1) the
22 selection of targeted network feeders; (2) the high

voltage test itself; and (3) the return to service of the feeders prior to the summer period.

This ongoing program will be funded for $5.4 million in 2009, $5.5 million in 2010 and 5.6 million in 2011.

PILC Cable Removal - This program removes paper insulated lead covered cable (PILC) from the electric distribution system. The Company plans to remove all PILC from the distribution system by 2020. PILC in the lowest performing networks is targeted for removal. As a priority, all PILC will be removed from the Long Island City Network by 2012.

This ongoing program will be funded for $33 million annually in 2009, 2010, and 2011.

Transformer Remote Monitoring - The Transformer Remote Monitoring System ("RMS") provides near real-time transformer data that assists our Distribution Engineering, Regional Engineering, Field Engineering, and Emergency Response Groups in a variety of functions such as monitoring transformer loading and its network protector switch status (open or close), providing data used in developing engineering plans for new customers, reinforcement of the network system, and most recently

measuring temperature and pressure within the transformer. The Company will be accelerating its program to upgrade all network transformer locations with a new third generation RMS transmitter that provides additional operating parameters such as transformer oil level, tank pressure, and oil temperature. This ongoing program will be funded for $9.8 million in 2009 and $13 annually in 2010 and 2011. This funding does not include the work that will be completed at the Transformer Shop or the cost of the equipment installed by the manufacturer on new units. The work at the transformer shop, and the cost of the additional equipment supplied with new equipment, are accounted for in the funding for Transformer Purchases.

Sectionalizing Switch Installation

In the past, the Company has installed switches on targeted primary feeder runs. These switches allow for isolation of feeder failures and the rapid subsequent restoration of the undamaged portion of a feeder. We are going to continue this program. The Company is also examining various options regarding splitting and redesigning existing networks.

1 This ongoing program will be funded for $4.2 million in
2 2009, $4.4 million in 2010, and $4.5 million in 2011.
3 **Underground Secondary Reliability** - We will continue a
4 targeted underground secondary cable replacement
5 program to increase overall system performance and
6 reliability and reduce electric shocks and manhole
7 events. This program is aimed at replacing aging
8 secondary cable infrastructure and associated conduit,
9 as required. The program also includes installation of
10 vented metal service box covers on the street and
11 vented composite service box covers on the sidewalks.
12 This ongoing program will be funded for $55 million in
13 2009, $51 million in 2010, and $57 million in 2011.
14 **Secondary Open Mains** - This program involves emergency
15 repair work on the secondary network to address
16 secondary cable failures. These repairs often involve
17 cable replacement, joint replacement, and related
18 conduit and subsurface structure work. This also
19 includes any access requirements such as excavating in
20 the street to perform the work. Secondary open mains
21 require repair to maintain the integrity of the
22 secondary network system. This ongoing program will be

funded for $144 million in 2009, $139 million in 2010, and $130 million in 2011.

Grounding Transformers - This program installs grounding transformers on supply feeders to 13kV and 27kV autoloops in order to eliminate over-voltages that can occur during a primary feeder fault. This program will be funded for $.15 million in 2009, $.18 million in 2010, and $.15 million in 2011.

Shunt Reactors - This program continues the installation of shunt reactors to prevent over- voltage conditions that may occur when a feeder remains energized from the network. The program will be funded for $1.4 million in 2009, $2.8 million in 2010, and $2.8 million in 2011.

Network Reliability - The Company will establish new distribution feeders by splitting existing feeders. To accomplish this, bifurcated feeders, which supply a network via two main runs of cables (legs), will be split, creating two separate feeders. Feeder "de-bifurcation" improves network reliability by reducing the number of transformers that are taken out of service by a feeder failure. This ongoing program will

be funded for $25 million in 2009 and $26 in 2010 and 2011.

Coastal Storm Risk Mitigation - This program is being implemented part of Con Edison's Corporate Coastal Storm Plan ("CCSP"). We were in New Orleans performing storm restoration work on Entergy's underground system and saw first hand the impact a hurricane has on underground equipment. Our analysis of equipment during the development of the CCSP identified the exposure of underground equipment in each storm surge zone associated with hurricanes as established by the Army Corp of Engineers. Some of our underground equipment within the anticipated storm surge area is not designed to be exposed to salt water and could fail, thereby risking the integrity of the distribution feeder and the associated network. There is also a safety concern during the initial stages of a coastal storm due to the possible exposure of emergency responders or the public to stray voltage from energized, non-submersible equipment. We have established this program to mitigate the impact of salt water exposure and to restore

service to the customers in the affected areas within a reasonable timeframe.

The Company will install flood switches to isolate transformer vault locations. The switches allow the transformer to be de-energized, without the need to de-energize its supply feeder, to isolate portions of the system in anticipation of a significant coastal storm event.

This ongoing 20 year program will be funded for $3 million in 2009, 2010, and 2011.

Transformer Purchase - This program will fund the purchase of new and/or refurbished electrical distribution equipment - primarily underground network transformers, overhead transformers, padmount transformers including mini-pads, emergency generators, and network protectors - to support distribution system relief, reliability, emergency, and growth programs. Based on a new Department of Energy (DOE) mandate, all transformers built after Jan 1, 2010 must meet new efficiency standards. In 2009, the Company will be transitioning to transformers built to this new standard, which is expected to increase the cost of

1 transformers. The impact of the DOE mandate is not and
2 could not be reflected in the current funding
3 requirements. We will not be able to estimate the
4 increased costs until the transformer redesigns are
5 completed and the manufacturers provide preliminary
6 pricing information reflecting these designs and the
7 prices of raw materials, particularly copper and core
8 steel (the rules require use of higher-grade core steel
9 that is in short supply globally). We have heard
10 informal estimates of a 25 to 40 percent increase in
11 transformer prices. Our update testimony will further
12 address the impact of these cost increased on the
13 Company's rate year revenue requirement.
14 This ongoing Transformer Purchase program will be
15 funded for $150 million in 2009, and $147 million
16 annually in 2010 and 2011.
17 **Elmsford Substation Refurbishment** - This program will
18 relocate all thirty-two 13kv distribution feeders at
19 the existing Elmsford Substation from their present
20 breaker position to their new position at the newly
21 refurbished Elmsford Substation. This program will be

funded for $1.3 million in 2010 and $2.0 million in 2011.

59th Street Bridge Crossing - This program will replace six feeders that are routed over the 59th Street Bridge and supply Roosevelt Island. This project will upgrade the existing supply to Roosevelt Island, provide spare capability to add additional feeders for future growth, enhance the protection for the feeder cable to mitigate failures, and enable quicker restoration of these feeders in the event of a failure. This program will be funded for $2 million in 2011.

Q. Please describe how the Company plans to address the performance and reliability of distribution substations.

A. The "Distribution Substation Modernization" section under the category of "System and Component Performance" in Exhibit (IIP-6) includes several programs and projects that increase reliability, alleviate operational problems, and enhance security in unit substations. Upgraded equipment modernization will provide operational performance data with improved accuracy and speed. These upgrades allow for quicker

1 response times to prevent failures of unit substation
2 equipment. Some of these improvements will also enhance
3 remote monitoring and control.
4 Providing the control center with the ability to
5 remotely control certain unit substation equipment
6 decreases customer outage restoration time.
7 The replacement of transformers, breakers, relays, and
8 switchgear due to poor performance or operational
9 issues increases a unit substation's overall useful
10 life and maintains reliability on the 4kV system.
11 Upgraded circuit breakers and microprocessor-based
12 relays increase reliability.
13 Distribution substation modernization also addresses
14 increased security requirements and general
15 improvements. New higher fencing with smaller mesh,
16 additional lighting, and upgraded security locks
17 improve security.
18 Q. What are the specific programs in the Distribution
19 Substation Modernization category of System and
20 Component Performance in Exhibit __ (IIP-6)?
21 A. The specific programs are as follows:

Trip Coil Monitor - This program adds electrical system equipment and components to monitor the control circuit to ensure operability. If the breaker failed to trip due to a dc circuit problem, damage could occur at the station or there could be customer outages. This ongoing program will be funded for $.2 million in 2009, 2010, and 2011.

USS Automation - This program continues the installation of the 4kV Unit Substation Automation System. The work includes the installation and wiring of hardware at distribution substations, and checking and certifying the remote operation of circuit breakers and equipment from the regional control centers. This ongoing program will be funded for $.15 million annually in 2009, 2010, and 2011.

Facility Improvement Program - This program upgrades to unit substation fencing, landscaping, paving, and security. This program will be funded for $.4 million in 2009.

Tap Changer Position Indicator System - This project installs tap position indication in the transformer changer compartment at 4kV Unit Substations and

connects the indicator to the Unit Substation Automation (USA) system. This will enable remote voltage reduction and de-loading of transformers during a contingency.

This ongoing program will be funded for $.13 million 2009 and 2010.

Temperature Gauges - This program upgrades existing temperature gauges to new electronic gauges at all unit substations. These gauges provide improved information regarding the status of transformers at unit substations to support decisions regarding transformers during contingencies.

This ongoing program will be funded for $.1 million in 2009, 2010, and 2011.

USS Transformer Replacement - This program replaces failed unit substation transformers. Historically, there has been one 4 kV unit substation transformer failure per year. This ongoing program will be funded for $.6 million annually in 2009, 2010, and 2011.

4kV USS Switchgear Replacement - There are approximately 170 unit substation switchgear 'line-ups' that have been in service for more than 40 years. This

program is intended to address operational problems and reduce the risk of switchgear failure related to the aging of this equipment. The switchgear at 40 unit substations will be replaced over 20 years.

This ongoing program will be funded for $2.2 million in 2009, 2010, and 2011.

Unit Substation Life Extension Program - This program involves projects to extend the useful life of unit substations. The two main components of these upgrades are the replacement of air circuit breakers with vacuum circuit breakers and replacement of electro-mechanical protective relays with microprocessor based relays. This work will require extensive cubicle modifications, new control wiring, verification testing and scheduled feeder outages. Many of these cubicles requiring upgrades will need asbestos and lead abatement during the course of this work.

This ongoing program will be funded for $1.7 million in 2009, $1.2 million in 2010, and $1.3 million in 2011.

Auto Reclose Relays on Bank Breakers - This project installs transformer secondary breaker ("bank breaker") "auto-reclose" relays at various unit substations.

Unit substations, in certain 4kV grids, are supplied through an automatic transfer switch that provides an alternate supply feeder in the event that the primary supply feeder is out of service. To take advantage of automatic transfer between primary and alternate supply feeders, the unit substation bank breaker must have the capability to "auto-reclose" following transfer. Twenty unit substations require the installation of the transformer bank breaker auto-reclosing relay. This ongoing program will be funded for $.25 million annually in 2009, 2010, and 2011.

Q. Does this complete your discussion of Electric Operations' capital programs and projects in the "System and Component Performance" category of Exhibit __ IIP-6?

A. Yes.

System and Component Performance - Electric Operations O&M Programs

Q. Please describe Electric Operations' O&M program changes in the "System and Component Performance" category of Exhibit __ (IIP-7).

A. We will describe five program changes to Con Edison's O&M programs for System and Component Performance.

Additional information about these programs and the program changes is contained on pages 38 through 43 of white paper Exhibit __ (IIP-15). These program changes are as follows:

Unit Substation repairs and inspection - This program is for general repairs of Unit Substations, including foundations, and spill prevention control and countermeasure (SPCC) improvements. This program will be funded for $1.1M in RYE 2010, RYE 2011, and RYE 2012.

Automatic Transfer Switch Operator Replacement - This program will install new Automatic Transfer Switches (ATS) switches at unit substations to provide increased reliability. This program will be funded for $.9M annually in RYE 2010 and RYE 2011, and $.2M in RYE 2012.

RMS Response Group - This new program establishes a task force that will be deployed primarily to maintain a transformer Remote Monitoring System reporting rate of 90% for each network. This program will be funded for $1.8M in RYE 2010, RYE 2011, and RYE 2012.

Electrical Engineering Support- This program change will increase the engineering resources in Electric Operations to provide the level of technical support required to implement incremental Electric Operations capital programs to increase system reliability, ensure public safety, and meet the needs of increasing customer demand. This program will be funded for $ 4.7M, $4.8M, and $4.8M annually in RYE 2010, RYE 2011, and RYE 2012 respectively.

O&M Vault Repairs - This program change provides increased resources to address the increasing volume of O&M vault repairs that is resulting from the increased amount of targeted inspections performed as part of the 5-Year Safety and Reliability program. These repairs include vault grating repairs, the fabrication and replacement of transformer roof slabs, and structural repairs to vault walls and beams. This program will be funded for $ 4.5M, $5M, and $5.5M annually in RYE 2010, RYE 2011, and RYE 2012 respectively.

Q. Does this conclude your testimony regarding Electric Operations' O&M program changes under System and Component Performance in Exhibit __ (IIP-7)?

A. Yes. Now we would like to discuss our public safety and environmental initiatives.

PUBLIC SAFETY AND ENVIRONMENTAL IMPROVEMENTS

Q. Please provide an overview of Electric Operations recent efforts to enhance the safety of the electric system.

A. Con Edison strives to ensure the safety of both the public and our employees. Safety is always a paramount consideration in each and every task. The Company has undertaken unprecedented steps to improve the safety of our electric distribution system. In 2004, the Company conducted a thorough risk assessment to identify and address the highest priority public safety concerns. These include stray voltage detection, transformer failure prevention and underground structure event prevention. The Company has implemented targeted programs that address these priorities and help mitigate the public safety risk. The Company has implemented various advanced technologies such as the mobile stray voltage detection, isolation transformers, transformer dissolved gas analysis, and composite

1 covers. The Company is committed to improving public
2 safety and is working on various research initiatives
3 with EPRI, GE, University of Connecticut, and Columbia
4 University to develop solutions that address these
5 concerns.
6 Major programs undertaken to mitigate electric shock
7 hazard from stray voltage include the manual and the
8 mobile stray voltage testing programs, five-year
9 underground and overhead inspection programs, non
10 conductive composite cover installation, and
11 streetlight isolation transformers. Major programs to
12 prevent transformer failures include the vault cleaning
13 program, oil minder program, tank rupture mitigation
14 program, anode installation program, and the dissolved
15 gas analysis program. Major programs to mitigate
16 underground structure events include the vented manhole
17 and service box cover project.
18 The Company has achieved significant milestones in
19 improving public safety over the last four years, the
20 number of electric shocks that were caused by Company
21 equipment have been reduced by 80%. During the same
22 period the number of transformer failures has been

reduced by 55% and the number of underground structure events has been reduced by 25%.

Public Safety and Environmental Electric Operations Capital Programs

Q. Please describe Electric Operation's capital Public Safety and Environmental projects listed in Exhibit __ (IIP-6)

A. The category "Public Safety and Environmental" in Exhibit __ (IIP-6) includes three projects to maintain that we will describe each in our following testimony. The white paper exhibit describing the Electric Operations "Public Safety and Environmental" capital and O&M programs is titled "Public Safety and Environmental - Electric Operations." The capital projects are described on pages 2 through 5 of that exhibit.

MARK FOR IDENTIFICATION AS EXHIBIT __ (IIP-18)

Q. Please begin your description of Electric Operations' capital Public Safety and Environmental projects beginning with the "Oil Minder" program.

A. **Oil Minder Program** - This program will install new oil minders each year at underground network transformer

structures to mitigate possible oil release into the environment from leaking transformers. The 'oil minder' was developed to prevent the pumped discharge of dielectric fluid from network type transformers into the sewer system. In addition to preventing oil discharge into the sewer system, the control system will register an alarm in the local control room through the Remote Monitoring System (RMS) whenever oil is encountered. This remote warning signal will facilitate early detection and clean up associated with leaking transformers.

The cost of the program will be $.6 million per year for 2009, 2010, and 2011.

Vented Manhole Covers - These vented covers vent gases and lessen the force that can lift the structure cover. In lab testing conducted by the Electric Power Research Institute, vented covers were shown to lift either slightly or not at all during an explosion. The cost of the program is $10 million in 2009 to complete the installation of vented covers on the Company's distribution system manholes.

The Company has initiated a similar program to install vented service box covers. The cost of that program is included in the Underground Secondary Reliability Program.

Street Light Isolation Transformers - Over the next 10 years, Con Edison will install isolation transformers and associated connectors in underground structures supplying streetlamps and traffic lights in New York City and Westchester. The installation of the isolation transformer will eliminate all street light stray voltage conditions associated with these structures (3,973 fewer conditions per year based on 2007 data).

The cost of this project is $7.8 million in 2009 and $10.5 million annually in 2010 and 2011.

Q. Please discuss Electric Operations' other capital programs that are intended to enhance public safety and safeguard the environment but are included in the Public Safety and Environmental category of Exhibit __ (IIP-6).

A. We will discuss two projects that relate to network transformer performance. The funding for both

projects is included in the capital funding for Transformer Purchase.

Natural Ester Fluid - This is a pilot program to use natural ester fluid (soy or sunflower oil) in underground distribution network transformers instead of mineral oil. Some of the advantages of natural esters include:

- Less flammable oil (high flash and fire point);
- Environmental benefits due to biodegradable properties;
- Potential life extension properties.

The attributes of natural esters could significantly reduce the potential damage and injuries caused by a tank rupture.

GE Tank Redesign - This project seeks to develop network transformer tank designs that will minimize the risk of tank ruptures from internal electrical faults and eliminate oil fires upon any rupture.

Public Safety and Environmental
Electric Operations O&M Programs

Q. Please describe Electric Operations' O&M program changes in the "Public Safety and Environmental" category of Exhibit __ (IIP-7).

A. We will describe eight program changes to Con Edison's O&M programs for Public Safety and Environmental. Additional information about these programs and the program changes is contained on pages 6 through 20 of white paper Exhibit __ (IIP-18). These program changes are as follows:

Dissolved Gas in Oil Analysis - This program tests the oil in network transformers for dissolved gasses (DGOA). The analysis of the gasses is used to identify the early stages of an electrical fault developing inside the transformer so it can be removed from service before failure.

The cost of the program is $4 million annually in the rate years ending 2010, 2011 and 2012.

5 Year Overhead Inspection Program and 5 Year Underground Structure Inspection Program - The Company performs visual inspections of all underground and overhead structures every five years in conformance with the Public Service Commission's Safety Standards (Case 04-M-0159). The underground inspections require opening approximately 272,000 underground manholes, service boxes and transformer vaults to evaluate the

condition of electrical equipment and repair any hazardous conditions. The overhead program requires the inspection of over 280,000 overhead poles (i.e., poles with Con Edison equipment attached). The Company's inspections, which include stray voltage testing, have contributed to stray voltage mitigation and have lowered the incidence of manhole events versus structures that have not been inspected. The underground and overhead inspection programs, combined, will cost an estimated $27 million per year for rate years ending 2010, 2011, and 2012. The program change for the overhead inspection program provides for the inspection of approximately 20 percent of the pole population per year. The poles were last inspected in 2005 when the entire population was inspected during that year. The program change for the underground inspection provides for an increase in the annual number of targeted inspections to complete the inspection cycle within five years.

Annual Stray Voltage Manual Testing Program - This program conducts annual stray voltage testing in accordance with the Public Service Commission's Safety

Standards (Case 04-M-0159). The program change reflects the increased annual cost of this program. The annual stray voltage program will cost an estimated $8.9 million per year for rate years ending 2010, 2011, and 2012. The Company has asked the Commission for approval to substitute mobile stray voltage testing for manual stray voltage testing in underground network areas where mobile testing is very effective. The Company's updated filing in this proceeding will address the status of this request and adjust the cost of this program as appropriate.

Electric Distribution Inspection System (EDIS) Improvements - The Electric Distribution Inspection System (EDIS) is the computer system that maintains the information on field inspections associated with manholes, service boxes, vaults and poles. EDIS will require Information Resources technical support to develop new functionality, correct deficiencies, and improve reporting capability. It will also be necessary to develop customized reporting and to accommodate ongoing enhancements based on engineering specifications.

The cost of the program is estimated to be $.2 million per year for rate years ending 2010, 2011, and 2012.

Mobile Stray Voltage Testing - Sarnoff Devices.

The use of advanced technology has been incorporated into the Company's stray voltage testing program to enhance public safety. The mobile stray voltage detector, a device developed by the Sarnoff Corporation, in conjunction with Con Edison, allows rapid testing of the underground system for stray voltage without the need to perform a discrete test of each facility. The stray voltage sensor is mounted on the motor vehicle and can sense stray voltage from 30 feet away while moving along the roadway under 20 mph. It surveys the entire area for stray voltage, including non-Company structures such as fences, scaffolds, and customer equipment. The mobile stray voltage detector performs excellently in detecting stray voltage in underground network areas.

Since the beginning of the program in 2005 the mobile stray voltage detectors have covered approximately 40,000 miles and completed 8 full system scans in addition to numerous targeted scans on parade routes

1 and special events such as New Years Eve in Times
2 Square. A total of 7,440 stray voltages have been
3 detected since the inception of this program. The
4 mobile stray voltage program has been the most
5 significant contributor to the 80% reduction in
6 reported electric shocks caused by Company-owned
7 facilities over the last three years. The program has
8 significantly contributed to public safety by detecting
9 4,449 stray voltage conditions from customer
10 facilities. This represents 60% of all the total stray
11 voltages detected. Pursuant to our latest rate order,
12 12 scans of the underground distribution system will be
13 completed during the rate year, and approximately
14 57,000 miles will be covered. The funding includes
15 labor to perform the scan, and labor to make temporary
16 repairs to secure the area safe. The cost will be $21
17 million, $22 million, and $23 million for rate years
18 ending 2010, 2011, and 2012.
19 **Network Transformer Vault Cleaning Program** - This
20 program will clean all underground transformer vault
21 locations on a five-year cycle. All debris and dirt
22 will be removed from the transformer, associated

equipment and its structure. Sump pumps, weep holes, and drains will be inspected. Vault cleaning will support the mitigation of corrosion which is the primary cause of in-service transformer failures as well as promote the proper ventilation (cooling) of a transformer to maintain the integrity of the transformer.

The cost of the program is estimated to be $7 million in the rate year ending 2010 and $7.7 million in the rate years ending 2011 and 2012.

Central Quality Assurance - This program will expand the Quality Assurance (QA) organization for Electric Operations. Work will include conducting field inspections each year to ensure work is completed with Company construction standards. The QA group will also conduct in-depth reviews each year that will focus on compliance with procedures. The cost for this expansion will be $4.6 million per year for the rate years ending 2010 thru 2012.

Q. Does this conclude your testimony regarding Electric Operations' O&M program changes under Public Safety and Environmental in Exhibit __ (IIP-7)?

1 A. Yes. Now we would like to discuss other Company
2 programs to protect the environment.
3 Q. Please discuss Con Edison's ongoing efforts to protect
4 the environment.
5 A. We continue to maintain our high standards regarding
6 environmental reporting and compliance. Innovest
7 Strategic Value Advisors ranked Consolidated Edison,
8 Inc. 2nd out of 27 international utilities in
9 environmental and social performance in a new 2007
10 Multi-Utilities & Unregulated Power index created by
11 the investment advisory firm. We have made strides in
12 this area and will continue to do.

13 **Public Safety and Environmental**
14 **Substation Operations Capital Programs**
15
16 Q. Please describe the programs listed in Exhibit __ (IIP-
17 2) under "Environmental."
18 A. There are three Substation Operations programs listed
19 in Exhibit __ (IIP-2) classified as "Environmental."
20 In addition to our description of these programs, the
21 white paper exhibit describing the Substation
22 Operations environmental programs and projects is
23 titled "Public Safety and Environmental - Substation
24 Operations." The capital projects are described on

pages 2 through 7 of that exhibit.

MARK FOR IDENTIFICATION AS EXHIBIT __ (IIP-16)

Q. Please discuss the three environmental programs

PURS Supervisory Control and Data Acquisition - This project replaces the Moore analog communication system on all high-pressure pipe type feeders that have associated Public Utility Regulating Station (PURS) plants. The Moore system is a 40-year-old technology that is obsolete with no vendor available for replacement parts. Its performance has been steadily degrading with mis-operations that shut down PURS plants impacting feeder power transfer capabilities. The new design will use as its primary means of communications the Company's CCTN network. It will use the Verizon network for redundancy. Project funding is $3 million per year for 2009, 2010, and 2011.

Pumping/Cooling Plant Improvements - This program has several facets:

- The pumping and cooling plant replacement and upgrade programs;
- Upgrade pumping plant skids and circulating pumps;
- Leak detections system (LDS) installation; and

1 • Pump house and circulating plant alarm panel upgrade
2 program.
3 In addition, a pump house connectivity program will be
4 implemented. A web-based software application will be
5 used to display pump house data remotely via the
6 internet. The funding for this project is $8.5 million
7 per year for 2009, 2010, and 2011.
8 **Environmental Risk Mitigation** - Effective risk
9 management is critical to ensuring good environmental
10 stewardship and the health and safety of the public and
11 our employees. Risk assessments have been conducted to
12 identify oil-filled and high-energy equipment in
13 substations that have a potential for environmental and
14 public health and safety impacts in the event of a
15 incident involving a release of dielectric fluid. The
16 process consists of a team conducting a detailed review
17 of various equipment identifying the probable worst
18 case failure mode and consequences, and assigns a
19 priority ranking based on the severity of the incident,
20 the probability of occurrence, and the ability to
21 detect by existing control mechanisms. Typically,
22 design modifications such as containment structures,

oil/water separator systems, drain modifications and other measures such as increasing the frequency of dissolved gas in oil analysis (DGOA) are implemented as a result of these assessments. Recommended equipment and facility modifications are developed based on a combination of the priority ranking and the complexity/feasibility of implementing the change or design alternative. The funding for this program is $3.5 million per year for 2009, 2010, and 2011.

Public Safety and Environmental System and Transmission Operations Capital Programs

Q. Please describe the two Transmission Operations Capital programs shown under the category of "Public Safety and Environmental" in Exhibit __ (IIP-4).

A. The two programs in this category are the DEC (Department of Environmental Conservation) Program Line and the Environmental Enhancements program. In addition to our discussion of these programs, the white paper exhibit describing the System and Transmission Operations Public Safety and Environment programs and projects is titled "Public Safety and Environment - System and Transmission Operations." The capital

1 projects are described on pages 2 through 4 of that
2 exhibit.
3 MARK FOR IDENTIFICATION AS EXHIBIT __ (IIP-17)
4 Q. Please continue.
5 A. The **DEC Program Line** is in accordance with the New York
6 State Department of Environmental Conservation (NYSDEC)
7 Consent Order dated November 4, 1994 and subsequent
8 modifications. Under this Order, Con Edison committed
9 to install stop joints at the shore manholes associated
10 with submarine crossings of 138 kV and 345 kV feeders.
11 A stop joint allows for hydraulic isolation of the
12 feeder and minimizes the loss of dielectric fluid in
13 case the feeder pipe develops a major leak in the
14 submarine section. The funding for this program is
15 $1.75 million in 2009
16 **Environmental Enhancements** is targeted to identify
17 leaks on our transmission system. Leak Detection
18 Systems are presently installed on several transmission
19 feeders with rapid circulation. Research projects are
20 developing leak detection systems for use on static
21 feeders and on feeders with slow circulation. The
22 Advanced Leak Detection System (ALDS) and the Neural

1 Network Leak Detection System are in various stages of
2 development. The funding is required to begin a
3 program of. This program is funded at $1.75 million per
4 year in 2010 and 2011 to install the systems on our
5 transmission feeders once they are proven to be
6 effective
7 Q. Does this conclude your testimony regarding your
8 environmental excellence initiatives?
9 A. Yes.
10
11 **STORM HARDENING AND RESPONSE**
12
13 **Storm Hardening and Response**
14 **Electric Operations Capital Programs**
15
16 Q. Please provide an overview of Electric Operations'
17 capital programs listed in Exhibit __ (IIP-6) under
18 "Storm Hardening and Response."
19 A. The Company understands that outages following a storm
20 event can be distressing for our customers. During
21 2006, three major storms impacted our service
22 territory. The Company's response to each of these
23 storms required extensive resources. While evaluating
24 our performance after each event, the Company, as well

as Vantage Consultants, identified opportunities to improve our emergency management strategy and process. We are interested in investing in programs that will reduce the number of customers affected during a storm, reduce the duration for those that are affected, and provide timely, accurate communications to our customers and all stakeholders.

The Company's Storm Hardening and Response programs will directly contribute to a reduction of interruptions by increasing sectionalizing capabilities, increasing remote monitoring and operational controls, and replacing suspect equipment and hardware.

Q. Please describe Electric Operation's capital Storm Hardening and Response programs and projects identified in Exhibit __ (IIP-6)

A. The category "Storm Hardening and Response" in Exhibit __ (IIP-6) includes a variety of programs projects that we will describe in our following testimony. The white paper exhibit describing the Electric Operations' "Storm Hardening and Response" capital and O&M programs and projects is titled "Storm Hardening and Response - Electric Operations." The capital projects are

described on pages 2 through 38 of that exhibit.

MARK FOR IDENTIFICATION AS EXHIBIT __ (IIP-20)

Q. Please begin your description of Electric Operations' capital Storm Hardening and Response projects by describing the benefits of improving the Company's feeder sectionalizing capabilities

A. The programs and projects to sectionalize the overhead feeders will reduce the number of customers affected by failures on feeders. When a fault occurs on an overhead feeder, a device automatically operates to isolate the defective section on one side of the device and maintain service to the customers supplied on the non-damaged section of the feeder located on the other side of the device. Other devices can be manually operated to further reduce the length of the feeder that is out of service and further reduce the number of customers affected by the outage. Due to an increase in load throughout the system, additional sectionalizing of load pockets has become necessary in an effort to minimize the number of customers affected by feeder faults. The sectionalizing of the overhead system will be implemented through a combination of installing additional sectionalizing devices, the

reconfiguration of existing feeders, and the addition of new feeders.

Q. Please describe the Storm Hardening and Response programs that improve sectionalizing capabilities.

A. The programs and projects that improve our sectionalizing capabilities are:

Autoloop Reliability- This program will improve the reliability of auto loops. Projects under this program include the addition of autoloops by extending feeders, installing reclosers (automatic sectionalizing switches) and associated components (poles, cable, etc.). Autoloops are used to automatically isolate a faulted area to minimize the customers that are impacted during an event. This ongoing program will be funded for $7.4.million annually in 2009 and 2010, and $7.5 million in 2011.

Automated Emergency Ties- This project will convert 50 manually controlled emergency feeder tie switches on 13 kV auto-loops to electronically controlled, automatic circuit reclosers equipped with wireless communication, remote monitoring and control capability. This ongoing

program will be funded for $.8M annually in 2009, 2010, and 2011.

ATS Installation USS Reliability- This program will install new Automatic Transfer Switches (ATS) switches at unit substations to provide automatic switching to an alternate supply when the primary supply is lost. This will help reduce customer outages as a result of the loss of the primary feeder. This program will be funded for $2.5M annually in 2009, 2010, and 2011.

Q. Please explain the benefits of increasing remote capabilities?

A. The programs to increase remote operations, status, and control capabilities will provide information from remote locations to assist Company operators make decisions that will reduce restoration time for each event. As overhead devices are replaced, or upgraded, with two-way communications, the Company can more accurately monitor the status of the feeders for increased loads and other conditions during normal operations, as well to more accurately pinpoint the location of a fault during an event. Additionally, with the ability to remotely operate devices in the

field, restoration crews no longer need to wait for switching crews to manually prepare feeders for work.

Q. Please describe the Storm Hardening and Response programs that increase remote capabilities.

A. The specific programs that increase remote capabilities are:

ESCO Switch Replacement(Kyle)- This program installs Kyle® switches, the most current technology, to replace obsolete 4kV automatic ESCO® switches. This program will also retro-fit existing Kyle® switches with Supervisory Control and Data Acquisition (SCADA) equipment to remotely monitor and control these devices. This program will be funded for $2.5 million in 2009, and $2.3 million annually in 2010 and 2011.

33 kV Interruptible Switches- This program will install SCADA switches on 33 kV feeders to reduce the customers impacted during an event, decrease feeder restoration times, and increase system reliability. This program will be funded for $.4 million, $.3 million, and $.3 million annually in 2009, 2010, and 2011.

Overhead Feeder Reliability - This program will replace all Vacuum Recloser Switch (VRS) upper units that are

over 20 years old, in compliance with company specifications, to improve the reliability of these switches and increase fault current capacity. This program will be funded for $.8 million, $.8 million, and $1.1 million annually in 2009, 2010, and 2011.

Enhanced 4kV Grid Monitoring - This program installs and tests a new Power Quality intelligent metering and control device and a new battery monitoring system at each 4kV unit substation. This ongoing program will be funded for $2.5 million, $3.5 million, and $2.5 million annually in 2009, 2010, and 2011.

URD Cable Rejuvenation/Fault Indicator - This program restores deteriorated solid dielectric cable to like-new dielectric strength by removing contaminants and moisture and filling voids in the insulation. Among other benefits, this program extends the life of URD cable at a 65% cost savings to new installation. This ongoing program will be funded for $.8 million, $.8 million, and $.2 million annually in 2009, 2010, and 2011.

Emergency Equipment Management System - This project will retire the 1980s vintage legacy system called the

1 Emergency Control System (ECS) and develop software to
2 replace its key components that are still required to
3 process work in Electric, Gas and Steam Operations. The
4 retirement of ECS will facilitate the consolidation of
5 outage management systems and make STAR the primary
6 tool for managing the outage restoration process and
7 improving outage reporting This project will also
8 enhance the Company's web site to provide improved
9 outage communications and facilities for customers and
10 municipal official to report storm damage and outage
11 information. The project will be funded for $3 million,
12 $1.5 million, and $1 million annually in 2009, 2010,
13 and 2011.
14 Q. Please explain the benefits of pro-actively replacing
15 suspect equipment?
16 A. The programs to replace suspect equipment and hardware
17 will help reduce outages as well as reduce restoration
18 time during an event. The targeted equipment is less
19 capable of withstanding high winds, rain, and ice
20 conditions. The programs to proactively replace
21 equipment will help to prevent outages and costly
22 repairs by targeting equipment that has demonstrated a
23 high failure trend. Additionally, the replacement of

this equipment will result in quicker restoration by ensuring that critical equipment functions as designed. The specific programs are:

C Truss Program - This program will accelerate the inspection of poles, and thus the installation of C-trusses (pole reinforcement) and the replacement of poles as needed, from a 12-year cycle to a 10-year cycle in order to bring Con Edison in line with industry practices. This ongoing program will be funded for $1.7 million, $1.8 million, and $1.8 million annually in 2009, 2010, and 2011.

Anderson Switches - This overhead enhancement program proactively replaces all outdated 4kV Anderson type oil switches with new open air switches. This program will be funded for $.1 million annually in 2009, 2010, and 2011.

3 Phase Gang Switch Replacement- This program inspects and replaces defective Gang Operated Switches on the 13kV auto-loops, 27kV auto-loops, and the 4kV overhead systems. The replacement S&C Hot-stick Operated Gang (HOG) switch is more compact, more reliable, and is operated via hot-stick. This program will be funded

for $.4 million annually in 2009, 2010, and 2011. The O&M costs associated with this ongoing program will be funded for $.3M annually in the rate years ending 2010, 2011, and 2012(Exhibit __ IIP-7).

Rear-Lot Elimination - This program eliminates backyard electric distribution systems and relocates the services to a location that provides easier access. The relocation of the pole line from the rear-lot to the front will help minimize outages, allow for routine maintenance, and eliminate the Company's dependence on customer cooperation and presence to perform maintenance and emergency operations. This ongoing program will be funded for $1.4 million annually in 2009, 2010, and 2011. The O&M costs associated with this ongoing program will be funded for $1.4 million annually in the rate years ending 2010, 2011, and 2012 (Exhibit __ IIP-7)

4kV UG Reliability - This program will preemptively replace targeted poor performing 4kV underground cable to reduce the outages associated with failed underground cables, joints, and terminations. The O&M costs associated with this ongoing program will be

funded for $1.1 million annually in 2009, 2010, and 2011.

Overhead Secondary Reliability Program - This program will replace overhead secondary wires that are aged, un-insulated, and undersized in order to improve service reliability and reduce customer outages. This ongoing program will be funded for $.5 million annually in 2009, 2010, and 2011.

Targeted Primary DBC Replacement - This program will replace targeted primary and secondary Direct Buried Cable (DBC) cables with cable-in-conduit (CIC) to improve reliability for Underground Residential Distribution (URD) customers and reduce expenditures incurred to repair DBC cables. This ongoing program will be funded for $.8 million annually in 2009, 2010, and 2011.

Aerial Cable Replacement - This program will replace high failure rate aerial cable on the non-network distribution systems to increase overall system performance and reliability. Replacing existing cable, such as Okonite, with new primary cable will reduce the frequency of customer interruptions due to aerial cable

failures. This ongoing program will be funded for $2.5 million annually in 2009, 2010, and 2011.

#4,#6 Self Supporting Wire- This program replaces #4 and #6 copper wire and self-supporting aerial cable (SSC) with aged or degraded outer tree protective jacketing to increase overall system performance and reliability. The feeders with the worst performance and highest degradation of cable will be given a higher priority for replacement. This ongoing program will be funded for $3.2 million annually in 2009, 2010, and 2011.

Storm Hardening and Response
Electric Operations O&M Programs

Q. Please describe Electric Operations' O&M program changes in the "Storm Hardening and Response" category of Exhibit __ (IIP-7).

A. We will describe seven program changes to Con Edison's O&M programs for Storm Hardening and Response. Additional information about these programs and the program changes is contained on pages 39 through 59 of white paper Exhibit __ (IIP-20). These program changes are as follows:

1 **Customer Response Program** - This new program will
2 provide additional Energy Service resources to provide
3 support to system emergency response efforts during
4 heat events, winter storms, overhead storms and other
5 system emergencies. This ongoing program will be funded
6 for $.4 million annually in RYE 2010, RYE 2011, and RYE
7 2012.
8 **Danger Tree Removal**- This electric distribution program
9 is in response to the Vantage Emergency Management
10 Audit recommendation that the Company link its
11 emergency management principles with those of its
12 construction and reliability programs. The program
13 funds the survey, identification and elimination of
14 off-right-of-way trees that are susceptible to toppling
15 particularly during storms, thereby mitigating damage
16 to the distribution system. This program will be funded
17 for $0.6 million annually in RYE 2010, RYE 2011, and
18 RYE 2012.
19 **Line Clearance Program** - This program implements the
20 new clearance requirements for our overhead lines that
21 were established in 2007 to reduce wires and equipment
22 damage from repetitive contact (wind damage) with limbs

and from fallen trees and branches. The program includes a customer outreach and education component and funding for compatible tree planting and environmental awareness initiatives. This ongoing program will be funded for $15.4 million annually in RYE 2010, RYE 2011, and RYE 2012.

Overhead Planning Group- This new program provides additional resources to coordinate overhead pole design, installation, removal and replacement among Company organizations, Verizon, third parties and municipal officials. Work will include the support of emergencies, planning, forecasting, design, construction and demolition of the overhead poles. Resources will also ensure the accuracy of the pole system maps and records. This new program will be funded for $.2 million annually in RYE 2010, RYE 2011, and RYE 2012.

Double Wood Program- This program continues the transfer of equipment and the removal of "double wood" poles(side by side utility poles usually awaiting the transfer of equipment from the older to the newer pole)

This ongoing program will be funded for $2.6 million annually in RYE 2010, RYE 2011, and RYE 2012.

Q. Please the Transmission Operations O&M program change in the category "Improve Strom Response" in Exhibit __ (IIP-5).

A. Transmission Operations is implementing a new program called **Improve Overhead Transmission Restoration Capability** to improve recoverability following a major incident impacting the overhead transmission system. The Company is purchasing temporary guyed lattice structures and associated materials that are designed to restore most transmission lines on our system, storing them at company locations and training company personnel in their use. Additional information about this program is contained on page 2 the white paper exhibit titled Storm Hardening and Response - System & Transmission Operations. Exhibit __ (IIP-29) (white papers).

MARK FOR IDENTIFICATION AS EXHIBIT __ (IIP-19)

Q. Does this conclude your discussion of the Company's Storm Hardening and Response programs and projects?

A. Yes. We will now discuss Con Edison's Advanced Technology and Process Improvement programs and

projects.

ADVANCED TECHNOLOGY and PROCESS IMPROVEMENT

Q. Please explain how the Company plans to incorporate technology or process improvements to enhance how it manages the operation of its electric transmission and distribution systems.

A. Our past and current methods of operation have allowed us to remain the most reliable utilities in the nation. However, at Con Edison, we are continuously seeking to improve with the goal of being an innovator and leader in the utility industry. We are always exploring opportunities to employ the latest technologies in order to streamline processes and improve performance. We welcome occasions to partner with educational institutions, utilities and professional organizations to develop and share knowledge gained by our exploration and experience. For example, The Company is part of a team developing a means of utilizing high temperature superconductor power cables and fault current limiters to develop and deploy "Resilient Electric Grids" for New York City. This project is

1 intended to demonstrate the capability of
2 superconductor and fault current limiting technologies
3 for future general use in construction and operation of
4 a more resilient electrical grid.
5 Con Edison and the Team will install this advanced
6 technology Superconducting Cable and associated
7 equipment between electrical interconnection points at
8 the East 75th Street area substation and the new York
9 area substation.
10 Technology touches everything we do. Employees are
11 encouraged to be innovative and curious. Our
12 technological initiatives cover a broad range of
13 applications. Through technology we have improved
14 operator performance, network reliability, and
15 efficiency. We have also expended much effort
16 researching and developing means to protect the
17 community and the environment. We will continue to
18 initiate programs to this end.
19 There are a variety of programs which we are proposing
20 under the category of "Advanced Technology" which will
21 ensure our operators and employees have the
22 technological resources to continue to operate the
23 system in the safe, reliable manner which our customers

have come to expect and demand.

Advanced Technology
Substation Operations O&M Programs

Q. Please describe the initiatives associated with the increased funding requirement for the "Advanced Technology" Programs for Substation Operations, shown on Exhibit __ (IIP-3).

A. There are two O&M programs under this category Telecommunications (Digital Fiber Optics/System Expansion) and Advanced Control Systems group. The white paper exhibit describing these O&M programs is entitled "Advanced Technology - Substations." The programs are described on pages 2 and 3 of that exhibit.

MARK FOR IDENTIFICATION AS EXHIBIT __ (IIP-21)

Q. Please describe the incremental funding requirements for the Substations Telecommunications program.

A. Substation Operations requires incremental telecommunications funding to adequately address system expansion for increased WAN (Wide Area Networks) and LAN (Local Area Networks) related to additional substations on the Transmission and Distribution System, as well as increased telecommunication needs.

The current construction schedule of our new facilities has resulted in incremental funding requirements over our previously approved levels. The Company will continue with its telecommunications upgrade program, which calls for the converting our existing analog relay protection circuits to digital fiber optics circuits. This project is required to increase reliability for relay protection and is necessitated by the fact that Verizon will no longer provide maintenance support for our existing analog systems.

Advanced Technology
System and Transmission Operations Capital Programs

Q. I show you a document entitled, "CONSOLIDATED EDISON COMPANY OF NEW YORK INC. - SYSTEM AND TRANSMISSION OPERATIONS - SYSTEM OPERATIONS CAPITAL PROGRAMS" and ask whether that document was prepared under your direction?

A. Yes, it was.

MARK FOR IDENTIFICATION AS EXHIBIT __ (IIP-9)

Q. Please generally discuss the System and Transmission Operations Advanced Technology capital programs and projects on the Exhibit.__ (IIP-9).

A. System Operations is the main focal point for all

operating organizations within Con Edison. It operates the Energy Control Center ("ECC") and controls generation, transmission and distribution. There is no room for error or delay, and therefore, it is imperative that the processes and systems used to manage our system provide the operators at the ECC with comprehensive, accurate, and up to date information at all times. Exhibit IIP-9 shows capital projects Systems Operations in two categories "Advanced Technology" and "Other".

We will discuss four System Operations Advanced Technology programs in our testimony. The white paper exhibit describing System and Transmission Operations Advanced Technology capital programs and projects is titled "Advanced Technology - System and Transmission Operations." The capital projects are described on pages 6 through 21 of that exhibit.

MARK FOR IDENTIFICATION AS EXHIBIT __ (IIP-22)

Q. Please discuss the System Operations Advanced Technology projects on Exhibit __ (IIP-9).

A. The first Advanced Technology project is **Energy Management System**. The monitoring and control

capabilities of the Company's Energy Management System ("EMS") provides Control Center Bulk Power and District operators the ability to safely and effectively operate the Company's electric and steam system. In addition to providing the operators with monitoring and control capability, EMS provides many applications and tools that support advanced real-time analysis of system conditions; warning alarms for actual and possible contingencies; and interfaces to the NYISO for operational needs, load shedding, voltage reduction and rapid restoration capabilities.

Q. What does the Energy Management System capital program include?

A. This project will continue and complete the new EMS project funded in the Company's 2005 to 2008 Rate Plan approved in Case 04-E-0572. In 2005, work started to replace both the transmission and distribution EMS with a new integrated EMS for use by the Bulk Power and District Operators. The new EMS will provide full system redundancy at both the primary and back-up Energy Control Centers. This system incorporates into one EMS both SOCCS and SOCCS-X. The first phase of the project brought in the new EMS replacing the legacy

Boeing system, and transferred the operation of the transmission system to the new platform. This included the modification of all transmission RTU's to enable communication to the new system at the ECC and to the new alternate energy control center ("AECC"). The first phase also established an expanded communication infrastructure between the ECC and AECC that allowed both control centers to communicate with each other and to provide additional computer system redundancy and increased reliability.

The second phase of the new EMS project will incorporate the supervisory and control aspects of distribution system on the same computer platform as the transmission system. This project will include the specification, procurement, design, testing and final commissioning of the new EMS expansion to the distribution system. This program is funded for $2.0 million in 2009.

Q. Please discuss the other capital programs in this category of Advanced Technology for System and Transmission Operations?

A. These programs are: Work Management Systems, EMS Continuance, Operation Requirements (On-line Systems),

1 District Operations Improvement, and Bulk Power
2 Improvements.
3 Q. Please continue.
4 A. **Work Management Systems** - This program is comprised of
5 the Distribution Orders Enhancements project and the
6 Outage Scheduling System.
7 Distribution Orders Enhancements is designed to
8 increase electronic issuance of operation orders and
9 enhance disaster recovery of critical systems. The
10 processing of orders between organizations is done
11 through the Rapid Restore system interfaces, which are
12 linked to the Feeder Management System used by the
13 District Operators. This program supports changes
14 needed to the Rapid Restore interface at the Energy
15 Control Center, ensuring that orders and order
16 responses are electronically processed and managed
17 among all authorized users and systems. In addition,
18 the program includes adding the Rapid Restore
19 functionality to the new Alternate Energy Control
20 Center. This expansion continues our efforts to provide
21 complete and independent operational capabilities at

the alternate control center to ensure full operational control should the primary location become unavailable. The new Outage Scheduling System will replace the existing application, and will be designed to provide improved flexibility, more effective scheduling between organizations, user definable Human-Machine interfaces (HMI) and more capability to interface to other systems than the existing system.

The funding requirement for this initiative is $3.25 million in 2009 and 2010, and $0.3 million in 2011.

EMS Continuance - Two of the most significant issues presented by legacy systems are the manufacturers' inability to maintain support staff for the older systems as well as their inability to acquire hardware that is compatible with the original systems. By keeping the operating systems current, we will ensure the compatibility of software applications and the manufacturer will be able to support our systems in the long-term. Thus, EMS plans include the scheduling of periodic system upgrades so that the EMS remains close to the manufacturer's current release level.

The EMS Continuance program will provide both operating system and hardware upgrades for the new Energy Management System based on the manufacturer's release guidelines. The new EMS for the transmission and distribution system will be upgraded periodically to ensure that the latest improvements from the manufacturer are added to our system and to ensure that the hardware is upgraded to ensure compliance with the needs of new operating systems. The funding requirement for this initiative is $0.5 million in 2010, and $1 million in 2011.

Operation Requirements (On-line Systems) - These projects in this initiative support essential operating needs that are broadly based, covering multiple user needs and overall support of system integrity and cyber security. The funding requirement for this initiative is $3.4 million in 2009, $2.65 million in 2010, and $0.5 million in 2011.

- Upgrades to EMS to support changes and requirements from the NY Independent System Operator (NYISO).- This project supports changes to the EMS and its interface to the NYISO to ensure that critical power

system information is shared between Con Edison, the NYISO and generator owners. In addition, this program supports changes to the EMS should the NYISO require interface changes to meet their operational needs.

- Maximum Generation and Fast Load Pick-Up Functionality Improvements and Added Diversity. - Generating stations need to receive individually and in mass electronic commands to increase generation at emergency rates to meet customer load demands and NYISO statewide needs. This effort upgrades the technology used from unsupported Verizon direct current cables to modern Remote Telemetry Units (RTU). The change to RTU technology will also provide independent capability at the Alternate Energy Control Center which is needed to support complete disaster recoverability should the primary control center become unavailable. This change would require adding control and possibly indication points to each station RTU for receipt and initiation of the control room alarm.
- The GT Remote Start - This program will make use of RTU technology to provide independent capability of

this operational requirement to the Alternate Energy Control Center providing complete disaster recoverability should the primary control center become unavailable. The GT Remote start function provides the ability to start the gas turbines from the control center when generation is required very quickly and to support NYISO statewide needs. This change would require adding control and possibly indication points to each station RTU for receipt and initiation of the start-up sequence for remote GT's.

- Plant Information System - The existing data information and archiving system is used to provide transmission and distribution real-time data to departments outside of the Energy Control Center. This data provides information directly to individuals and systems that are used to support daily operations and planning. This capability will be expanded and will be enhanced to provide support for users through outside interfaces.
- Cyber Security - The importance of maintaining the operability of the network infrastructure that the EMS system resides in is important for the reliable

operation of the system. System Operation currently uses firewalls to protect and isolate the networks at its perimeter. Intrusion detection technology is the next step in controlling the opportunity for harm. Intrusion Detection Systems (IDS) can reveal intruder activity within the protected infrastructure and on its periphery as well as at its perimeter. This next step will afford a higher level of protection by warning of attempted intrusions at both the primary and alternate energy control centers. The company's regulating entities also recognize the value of IDS. This system will allow us to meet NERC Cyber Security requirements within CIP002-009. The funding requirement is $0.7 million.

- EMS for Electric / Steam Operation - Develop and install a new Energy Management System (EMS) for operation of the Steam system. Historically, the steam operation function had been allocated space in the larger Transmission and Distribution (T&D) EMS. Due to the unique nature of the steam system, the needs of the operation would be better served on a much smaller EMS. This separation will allow for

1 necessary custom functionality for steam operation
2 without the issues of integrating custom needs into a
3 standardized T&D EMS while ensuring connectivity to
4 electric generating plants that also generate steam.
5 The program will include the development of the
6 design specification, selection of vendors and
7 installation of a redundant and independent EMS for
8 the Steam system.

9 • Operations Network for EMS - The network
10 infrastructure at the Energy Control Center and
11 Alternate Energy Control will be upgraded and
12 expanded as required to maintain the security and
13 reliability of these critical networks. New
14 firewalls, routers and switches will be added to
15 support the changing needs of our infrastructure, and
16 to meet NERC Cyber Security, NERC CIP002-009,
17 standards to maintain isolation and increase control
18 of network access. The network wiring will also be
19 upgraded to support data transmission at a wider
20 bandwidth.

21 **District Operations Improvements -**

1 The District Operators coordinate and direct all
2 switching operations and permits to work on Con
3 Edison's transmission and distribution systems,
4 ensuring safety to personnel and safe operation of
5 equipment while minimizing downtime. District Operators
6 perform over 500,000 operations per year. The sheer
7 volume of work, coupled with the complexity of the
8 systems, the variety of equipment types, and associated
9 set of operating rules and requirements, have made the
10 District Operator's job extremely challenging. The
11 automation of processes coordinated by the District
12 Operators enhances the operating environment and
13 improves operating efficiency by increasing the
14 productivity of field and substation personnel crews
15 and reducing feeder-processing time. For example, by
16 eliminating routine handoffs, the District Operators
17 can afford to devote more time to analyzing complicated
18 situations thoroughly prior to issuing orders,
19 lessening opportunity for an operating error while also
20 reducing feeder restoration time.
21 This project will enhance the District Operation
22 Process Automation System and Task Managing System to
23 improve operating processes through new tools and

increased automation of operating orders and operating step validation. This project will also interface these systems to CTSEOS (Critical Transmission and Substation Equipment Outage Status) to automate updates between corporate systems, eliminate manual entry requirements and provide more timely information to users. In addition, this project will provide upgrades of the computer hardware and operating systems to improve the reliability of these systems. The funding requirement for this initiative is $1 million in 2009, $1.8 million in 2010, and $0.950 million in 2011.

Bulk Power Improvements - EMS Visualization - Using the digital replication of the Bulk Power System used on the new Energy Management System (EMS), this project will develop new tools to allow the operators to monitor and view specific details of the status of the power system from the macro down to the micro level at the click of a button. Information from various operations and corporate systems will be made available so that the operators will have access to this information from one display. This project builds off the flexibility and opportunities provided by the new

1 EMS and its extensive LCD projection walls, providing
2 operators with a central means to access critical
3 information in a timely manner, improving response to
4 operational issues and overall monitoring of system
5 conditions. The funding requirement for this initiative
6 is $0.5 million in 2009 and 2010 respectively.

7 **Advanced Technology**
8 **Electric Operations Capital Programs**
9
10 Q. Please provide an overview of the technological
11 projects that Con Edison plans on implementing in order
12 to improve the performance of its electric distribution
13 system.
14 A. Over the past several years the Company has implemented
15 an integrated strategy to improve the operations,
16 design and construction of the electric distribution
17 infrastructure. The Company has leveraged and
18 implemented various advanced technologies and process
19 improvements to improve the efficiency and monitoring
20 of the distribution networks. Major initiatives under
21 this strategy include the design and implementation of
22 the mobile stray voltage testing vehicle, enhanced
23 outage management system for network outages (STAR),
24 reactance to fault (RTF) application for primary fault

location, and a new decision support and visualization tool, Heads Up Display. In addition, the Company continues to make significant use of mobile computing and wireless technologies to improve the productivity and response of its field forces.

Going forward the Company plans to continue to invest in these and other advanced technologies to create a "smart grid" that will facilitate improved design, construction and monitoring of the electric distribution networks. These technologies will continue to integrate data from various sources and provide sophisticated decision-support tools. In addition, the advanced technologies will provide more comprehensive status information, correlate performance and failure data, and drive actions that will allow us to more effectively avoid and mitigate problems within the distribution system. Over time, the "smart grid" will also improve energy efficiency. Key advanced technology programs are focused on providing enhanced information systems to better support key business processes including:

- Electric systems monitoring and control

- Electric load flow modeling
- Customer outage management and response
- Asset management and optimization
- Construction work management
- New business project tracking

In addition, there are several programs targeted to upgrading and improving the underlying technology infrastructure that is used to support these key processes. New computer hardware, software, and networks provide increased levels of system reliability and improved disaster recovery capabilities.

Q. Please describe Electric Operation's capital Advanced Technology programs and projects identified in Exhibit __ (IIP-6)

A. The categories in "Advanced Technology" in Exhibit __ (IIP-6) include a variety of programs projects that we will describe in our following testimony. The white paper exhibit describing Electric Operations' "Advance Technology" capital programs and projects is titled "Advanced Technology - Electric Operations." The capital projects are described on pages 1 through 32 of that exhibit.

MARK FOR IDENTIFICATION AS EXHIBIT __ (IIP-23)

Q. Please begin your description of Electric Operations' capital Advanced Technology programs and projects by describing Secondary Visualization Model

A. **Secondary Visualization Model** - This project entails the development and operation of distributed secondary network load flow models using Poly Voltage Load Flow (PVL) software. The program adjusts the service point demands (in kVA) calculated by the Service Demand Estimator program (SDE) determined from customer billing data utilizing the telemetry loads measured by the Remote Monitoring System (RMS) at each network transformer. This will provide engineering and operations a tool that will model and monitor the loads on the secondary grid to identify areas of overload, open mains and blown limiters. This ongoing program will be funded for $4.3 million in 2009, $2.6 million 2010, and $2.6 million 2011.

Secondary Monitoring (Secondary Model Validation) The μRTU Secondary Monitoring project is designed to provide near real time secondary grid load flows at strategic network locations for use in validating the

distributed secondary load flow models. A new technology based on a μRTU Secondary Monitoring device will be installed strategically in some of our underground networks over the next five years to provide near real time data information from the secondary mains. This ongoing program will be funded for $4 million in 2009 and 2010, and $6 million in 2011.

Distribution Engineering Workstation - Utilizing new circuit analysis software called Distribution Engineering Workstation ("DEW"), which was initially developed through the Electric Power Research Institute ("EPRI") as a classical engineering analysis tool, this model will serve as the foundation of the "Smart Grid of the Future." It will become a key tool for enhanced distribution engineering planning and analysis, as well as for real-time control center operations. This ongoing program will be funded for $2.5 million annually in 2009, 2010, and 2011.

Pole Attachment Project - To comply with requirements established in the Commission's ongoing Pole Attachment Proceeding (03-M-0432), the Company implemented a plan

that focuses on business processes, reconciliation of pole and third party attachment records, and IT systems development. The IT systems component involves the development of a number of centralized systems, including a pole asset master database, a third party attachment database, and a third party work management system. This program will be funded for $1.4 million annually in 2009 and 2010.

Grid Optimization - This project seeks to optimize the reinforcement of the electric grid by implementing software applications to support both the efficient reinforcement of electric cable, switches and distributed resources on the system as well as to potentially measure and enable curtailable load. This program will be funded for $0.9 million annually in 2009, 2010, and 2011.

Integrated System Model - An Integrated System Model (ISM) is being constructed to eventually cover the entire Con Edison system from generators down to the customer. Intelligent algorithms and machine and reinforcement learning will provide decision support for evaluation of operations and planning designs and

procedures. This program will be funded for $1.7 million annually in 2009, 2010, and 2011.

Decision Aids - This project's goal is to develop a Decision Support System (DSS). The battlefield visualization system for making data and algorithms available to operators in an integrated view is an example of these tools. This program will be funded for $1.5 million annually in 2009, 2010, and 2011.

Area Profile System - A new mapping system known as the Area Profile System (APS - Phase 1 and Phase 2) was completed within the Energy Efficiency Programs Department. APS is built on a MapInfo platform and incorporates US Census data, Customer Information System account information, New York City Department of Buildings data, Dun and Bradstreet Business Information, and engineering connectivity (feeders, services, M&S plates) information from Cuflink. APS permits users to develop population/household estimates down to the census tract, block group, and block levels. This ongoing program will be funded for $0.1 million in 2009, 2010, and 2011.

Joint Pole Use Software - This project will design and enhance canned InQuest software to use present and future Con Edison (CE) system data to better communicate and coordinate joint use pole transactions among Con Edison, Verizon, Third Party Attachers, and Municipalities. This project will be funded for $0.5 million annually in 2009 and 2010.

Energy Efficiency IT Systems Development - This project will develop and implement a web based Energy Efficiency Management System (EEMS) that will assist in the management of energy efficiency programs. The system will interface with the Customer Service System (CSS), external data sources and the Area Profile System (APS) to extract leads and monitor completed measures for Energy Efficiency programs. The system will provide data access to desktop applications and analytical software. Sales leads will be routed to the appropriate area and tracked through completion, validation, payment, and performance reporting. System development will also be undertaken for audit, reporting and tracking procedures.

This program will be funded for $2.2 million in 2009, and $1.2 million annually 2010 and 2011.

High Tension Monitoring Data Acquisition System - This project will upgrade the existing meters associated with the 1400 High Tension (HT) feeders on the system, with a RF communication interface card and module that will support real time data acquisition.

This ongoing program will be funded for $0.7 million annually in 2009, 2010, and 2011.

Meter Shop ADAMS - In order to comply with Commission rules that require utilities to maintain records of the test accuracy and location of all electric meters used for revenue services, as stated in 16 NYCRR Part 92, Con Edison created the Automatic Data Acquisition - Meter Shop (ADAMS) application. ADAMS is an IMS based application, developed in the early 1980's, that tracks meter location and test accuracy. This project will replace ADAMS in order to provide additional functionality to respond to regulatory requirements.

This program will be funded for $1.3 million in 2009.

Integrated Route Sheet (Work Management) - This project establishes a new field work management and reporting

tool, for use with the newly deployed "Toughbook" computers, that will integrate existing corporate systems, such as e-Trac, Electric Distribution Inspection System (EDIS), Mapping databases (layouts), and a host of legacy systems such as Human Resources / Payroll, Finance, Materials Management, Purchasing, and Property Records.

This program will be funded for $3 million in 2009, $1.5 million 2010, and $1 million 2011.

Transformer Asset Management - In 2008, the EDIS deployment will be extended to replace the existing CINDE / Mainsaver inspection application, and historical data will be migrated to EDIS. While this will establish a better platform for distribution transformer inspections, Electric Operations needs an environment in which it can view and analyze data for transformers throughout their life cycle. This requires an integration effort between the new Asset Master and existing systems which capture and/or analyze data associated with transformer assets.

This program will be funded for $3 million in 2009, and $2 million 2010, and later funding will be determined as the system is developed.

4KV Load Shedding System - This program was initiated in 2003 to comply with NERC and NYISO load shedding and restoration requirements. There are 258 - 4kV Unit Substation transformers on the Con Edison System. Thirteen are completed. Work is proceeding on the remaining stations, and certifications will begin during the Spring, 2008. It is projected that all stations will be completed by December 31, 2011.

This program will be funded for $0.5 million in 2009, $0.6 million in 2010, and $0.5 million in 2011.

ATS Automation - This project will provide supervisory control of Automatic Transfer Switches supplying 4kV unit substations.

The ATS provides means of keeping the 4kV substation transformer energized by switching to the alternate feeder when the main feeder is out of service.

This ongoing program will be funded for $0.15 million in 2009, and $0.1 million annually in 2010 and 2011.

Power Quality (PQ Nodes) System Upgrade - This project replaces the existing power quality nodes in substations with new DataNodes; installs one more node (DataNode) on a second transformer in each station; enhances the reactance-to-fault (RTF) software / website; and develops an interface between the monitoring data management / analysis system (PQView), and substation monitors (DataNodes); and server upgrade.

This program will be funded for $1.7 million annually in 2009 and 2010.

SCADA Systems Consolidation - This project will consolidate the Company's 3 different SCADA Systems into one integrated package. The consolidation will be accomplished in 3 phases. Phase 1 - Load Shed, Phase 2 - Unit Substation Automation (USA), Phase 3 - Realflex This program will be funded for $0.8 million in 2009, $0.6 million 2010, and $0.5 million 2011.

Electric Distribution Control Center Upgrades - Each regional Electric Distribution Control Center is a 24 X 7 operation requiring the highest level of reliability and security. The information systems in use at the

1 Control Centers are vital to maintaining our ability to
2 deliver safe and efficient services to our customers.
3 Information Resources is recommending a four (4) year
4 plan to address required systems architecture and
5 communications network upgrades. This program will be
6 funded for $2.5 million in 2009, $1.5 million in 2010,
7 and $5 million in 2011.
8 **Mapping System Upgrades** - The Company operates and
9 maintains six corporate mapping applications in support
10 of its electric, gas and steam distribution systems.
11 Significant business benefits can be realized by
12 migrating to a single automated mapping / facilities
13 management environment, with a single data model, and
14 in giving the Company's facilities data a spatially
15 accurate orientation. This program will be funded for
16 $6.5 million in 2009, $5 million in 2010, and $3
17 million in 2011. O&M associated with this project will
18 be funded for $2 million in RYE 2011, and $4 million
19 RYE 2012. (Exhibit __ (IIP-7)
20 **Process Improvement**
21 **System & Transmission Operations O&M Programs**
22

1 Q. Please describe System and Transmission Operations' O&M
2 programs in the "Process Improvement" category of
3 Exhibit __ (IIP-5).
4 A. System and Transmission Operations has six programs
5 identified in the exhibit. In total these programs
6 will be funded at $0.625 million in the rate years
7 ended 2010 and 2011 and $0.37 in the rate year ending
8 2012. The white paper exhibit describing these
9 programs is Exhibit 24, entitled, "Process Improvement
10 - System and Transmission Operations." These programs
11 are described in detail on pages 2 to 7 of the exhibit.
12 MARK FOR IDENTIFICATION AS EXHIBIT __ (IIP-24)
13 **Process Improvement**
14 **Electric Operations Capital Programs**
15
16 Q. Please describe Electric Operations' capital programs
17 in the "Process Improvement" category of Exhibit __
18 (IIP-6).
19 A. Electric Operations has three capital programs
20 identified in the exhibit. In total these programs
21 will be funded at $2.4 million in 2009, $13.9 million
22 in 2010, and $18 million in 2011. The white paper
23 exhibit describing these programs is entitled, "Process

Improvement - Electric Operations." These programs are described in detail on pages 2 to 6 of the exhibit.

MARK FOR IDENTIFICATION AS EXHIBIT __ (IIP-25)

Process Improvement
Electric Operations O&M Programs

Q. Please describe Electric Operations' O&M program changes in the "Process improvement" category of Exhibit __ (IIP-7).

A. We will describe a variety of program changes to Con Edison's O&M programs for Process Improvement. Additional information about these programs and the program changes is contained on pages 6 through 24 of white papers Exhibit __ (IIP-25). These program changes are as follows:

Technical Support/NYC Regulatory Liaison Program - This project will provide additional staffing to enhance the knowledge and technical guidance needed to support Energy Services activities. Representatives are expanding their roles as electrical and gas code liaisons with New York City, contractors and other trade organizations. The role is expanding to include conducting service classification billing reviews, specification compliance reviews, and field reviews for

specification compliance. This ongoing program will be funded for $.2 million annually in RYE 2010, RYE 2011, and RYE 2012.

Field Auditing & Quality Control Program - This project will increase the staffing responsible for Energy Services preparation and reporting of self - assessment administrative reviews of goal 1 and 2 compliance. Additional responsibilities will include review and updating of all Energy Service related Customer Service Procedures (CSP's) and Construction Administration Manual (CAM) reviews. This ongoing program will be funded for $.4 million annually in RYE 2010, RYE 2011, and RYE 2012.

NAICS Code Append - This program will provide an annual update of North American Industry Classification System (NAIC). The annual update will provide key information for purposes of customer segmentation, load analysis, target marketing, and Demand Side Management (DSM) potential and will be linked to the Company's Customer Information System (CIS). This ongoing program will be funded for $.01 million, $.01 million, $.04 million

annually in RYE 2010, RYE 2011, and RYE 2012, respectively.

Establishment of a Regional Contractor Oversight/Review Group - In the past several years, Electric Operations has increased the use of contractors (i.e. underground cable and splicing; overhead construction) and has the responsibility for contract administration of these specialized service contracts. The Regional Contractor Oversight/Review Group will provide additional staffing to perform contract administration and contractor oversight to monitor contractor performance, perform site inspections to ensure compliance with our specifications and to coordinate contractor payment of invoices. This ongoing program will be funded for $.2M annually in RYE 2010, RYE 2011, and RYE 2012.

Electric Operations Process Management-EOPM - The goal of the Edison Project is to apply lean management, i.e., adaptive intelligent machine learning systems with user friendly interfaces to improve our business efficiency and transform our business processes. Edison Project engineers map out and streamline current work processes using lean management concepts, developing business

management software when necessary to integrate tasks. The goal is to speed up the process and improve productivity. This ongoing program will be funded for $.8M annually in RYE 2010, RYE 2011, and RYE 2012.

Engineering Contractor-Vendor Layouts - This project will supplement our Energy Services engineering staff with an engineering contractor to produce layouts. The consultant will be used to supplement our resources by completing the less complex drafting work. This ongoing program will be funded for $0.5 million annually in RYE 2010, RYE 2011, and RYE 2012.

Enhanced Project Planning in Electric Operations - This program will increase staffing for Regional Distribution Engineering to enhance project planning and oversight for Electric Operations. Each regional Distribution Engineering group will have additional staff to coordinate work for Electric Operations' capital programs. They will focus on completion of work according to priorities and milestone schedules and identifying opportunities for efficiencies. Included in the program is the Distribution Engineering Equipment Analysis Center (DEEAC). The group's mission

is to achieve optimum equipment performance through a system safety approach that utilizes data trending and incident analysis to proactively mitigate operational risk. This ongoing program will be funded for $9.2 million annually in RYE 2010, RYE 2011, and RYE 2012.

Electric Distribution Equipment Reconditioning & Repairs - This project will fund the recondition, repair and test of electrical distribution equipment, including network transformers, network protectors, pole-type transformers, mobile transformers, and mobile generators. This program will be funded for $1 million in RYE 2010, RYE 2011, and RYE 2012.

COOP's - This program will fund the hiring of seven Co-Op students to provide hands-on job experience working in Distribution Engineering. Co-Ops will receive training and field experience and will provide administrative support to managers and supervisors. Con Edison's Co-Op program is a career related educational program. This program will be funded for $0.35 million in RYE 2010, RYE 2011, and RYE 2012.

Senior Civil Engineer - Distribution Engineering requires a second civil engineer to support the growing

civil engineering requirements for field jobs, the increased activity level, and the new permit process established by NYCDOT, as well as to provide coverage during absences. This item funds one additional Civil Engineer position.

This program will be funded for $0.1 million in RYE 2010, RYE 2011, and RYE 2012.

Staffing Additions -Distribution Engineering requires an additional staffing to work on programs that mitigate the risk of violent transformer failures. Activities include review and analysis of returned field equipment, dissolved gas in oil samples, and remotely monitored transformer pressure, temperature, and oil level data. This program will be funded for $0.1 million in RYE 2010, $0.2 million in RYE 2011, and $0.3 million in RYE 2012.

Programming Resources for Electric Operations Applications - Electric Operations requires additional programming staffing to modify existing information systems in order to enhance critical functions including:

- Electric Asset Inspection and Validation;

1 • Network Transformer Operations and Maintenance;

2 • New Business and Construction Work Management;

3 • Customer Connectivity and Address Data

4 Management.

5 This program will be funded for $0.5 million annually

6 in RYE 2010, RYE 2011, and RYE 2012.

7 Q. Is there anything else that you would like to note

8 regarding the Company's expenditures?

9 A. We note that the Company may, during the course of this

10 proceeding, update its capital and/or O&M projections

11 to reflect the results of ongoing initiatives in other

12 proceedings before the Commission that could result in

13 material changes to Company operations.

14 Q. Is Con Edison considering a filing with the FERC to

15 revise Con Edison's rates for transmission service?

16 A. Yes. Con Edison's current FERC transmission rates have

17 been in effect for over 10 years. The rates were

18 established when Con Edison first filed its Open Access

19 Transmission Tariff and have not been revised, which in

20 some sense is attributable to load growth covering

21 increases in transmission costs. The Company continues

1 to review the transmission rate and would plan to update
2 it when appropriate to do so.
3 Q. Would an increase in Con Edison's transmission rates
4 automatically increase Con Edison's revenues?
5 A. No. FERC's approval of an increased transmission
6 revenue requirement would not increase Con Edison's
7 revenues in the near term because the rates that Con
8 Edison proposes in this case will limit Con Edison's
9 combined charges for transmission and distribution
10 services. In order for FERC's approval of increased
11 transmission rates to have a revenue effect, Con Edison
12 would have to re-file its PSC-jurisdictional rates and
13 exclude transmission costs.
14 Q. Why might such disaggregation of Con Edison's PSC-
15 jurisdictional rates be in the public interest?
16 A. The Energy Policy Act of 2005 reflected a Congressional
17 determination that the nation's transmission
18 infrastructure requires reinforcement and expansion. In
19 implementing that statute, FERC and other federal
20 agencies have stressed the need for the construction of
21 transmission projects that will reduce congestion and
22 enhance reliability, particularly in New York and
23 neighboring portions of the PJM control area. The FERC

has adopted ratemaking policies to implement the Congressional directives in EPAct 2005, and numerous utilities throughout the country have filed transmission rate cases consistent with those policies. While Con Edison's current transmission and distribution rates are currently aggregated in the PSC-jurisdictional tariff, many utilities across the country - including those in PJM - have disaggregated transmission and distribution rates. In light of these developments, a re-consideration of the current regulatory framework for consistency with federal policies on transmission investment and industry-wide practices would appear appropriate. The Company intends to solicit the input of the Commission staff before moving forward with any departures from the current framework.

ENERGY EFFICIENCY PROGRAMS

Q. Was the 1-page exhibit, entitled, "Con Edison DSM Forecast" prepared under your direction?

A. Yes, it was.

MARK FOR IDENTIFICATION AS EXHIBIT __ (IIP-26)

1 Q. You previously mentioned that the 2007 ten-year peak
2 load forecast incorporates 647 MW of permanent demand
3 reduction. Is the Company currently projecting to
4 achieve 647 MW?
5 A. No. The Company is currently projecting to achieve 685
6 MW by 2015. As shown in Exhibit __ (IIP-26), after the
7 2007 forecast was developed with 647 MW, the Company
8 contracted for Phase 4 of the Targeted DSM program,
9 received approval for continuing the Targeted DSM
10 program in the amount of 30 MW in the 2008 Electric
11 Rate Order and continued to improve and refine its
12 proposed 500 MW program, in particular the non-targeted
13 portion. As these changes took place after the 2007
14 Forecast was developed, they are not reflected in the
15 2007 Forecast and the resulting load relief plan.
16 Q. What refinements have been made since that time?
17 A. First, the Company developed (and continues to refine)
18 new programs for the filing that it made in the EEPS
19 proceeding on April 10, 2008. Second, to align our
20 plan with the State's 15 x 15 goal, the Company
21 advanced the programs so that all of the 500 MW DSM
22 Program would be achieved by the end of 2015. While
23 Exhibit __ IIP-26 reflects the Company's current

1 forecast for MWs to be achieved under its DSM program,
2 this is not the amount used by the Company's
3 Forecasting Panel in its testimony, which includes not
4 only the Company's projected programs (as of March
5 2008), but also other consumption reductions expected
6 as a result of the EEPS.
7 Q. Please describe the current status of the Company's
8 non-targeted programs in the EEPS proceeding.
9 A. On April 10, 2008, the Company filed a plan in the EEPS
10 proceeding requesting that a package of new energy
11 efficiency programs be approved for implementation
12 beginning this summer. The 11 residential and
13 commercial programs proposed in the filing are designed
14 to achieve 378 MW of demand reduction and reduce energy
15 use overall by 4.4 million MWh. The selected Energy
16 Efficiency Programs planned for an eight-year period
17 for residential and commercial customers are, on the
18 residential side: Appliance Dealer Incentive Program;
19 Residential Lighting Program; Residential Space Heating
20 and Cooling Program; and Home Energy Efficiency Kit;
21 and, on the commercial side: Office Building Program;
22 Buy-Back Program; Education and Healthcare Program;
23 Hospitality and Entertainment Program; Data Center

1 Program; Freezer Case LED Lighting Program; and Multi-
2 family Buildings Program.
3 The Company's total estimated cost of these programs is
4 $306 million through 2015, varying from approximately
5 $10 million this year to $75 million in 2015. The
6 Company proposed that funding would come from funds
7 already designated for energy efficiency programs in
8 the 2008 Electric Rate Order, which authorized the
9 Company to begin collecting approximately $50 million
10 annually for energy efficiency programs for the rate
11 year beginning on April 1, 2008 and which the
12 Commission expected would continue as part of an
13 overall program to achieve the EEPS goal.
14 We would note that the Administrative Law Judges in the
15 EEPS proceeding declined to consider the Company's
16 proposals as Fast Track proposals, but stated their
17 expectation that "the Commission will consider
18 establishing procedures for comment, assessment, and
19 approval of specific energy efficiency programs filed
20 by utilities and others." We would also note that, in
21 the 2008 Electric Rate Order, the Commission stated
22 that with respect to "the EEPS proceeding, our
23 assessment is that it is likely the proceeding will

1 result in substantial utility involvement in delivering
2 efficiency programs." The Company accordingly expects
3 that its proposals for the 378 MW of non-targeted
4 programs will be considered and approved in the EEPS
5 proceeding. To the extent that the Company does not
6 receive approval in that proceeding, and/or the
7 Commission directs that the Company's proposal should
8 be considered as part of this rate filing, the Company
9 incorporates its April 10, 2008 filing in the EEPS
10 proceeding by reference in this proceeding.
11 Q. You state above that 138 MW of incremental demand
12 reductions will come from the continuation of the
13 Company's Targeted DSM Program. What is the status of
14 this program?
15 A. The Company's Targeted DSM initiative is designed to
16 defer T&D projects where load relief will be needed
17 between two and four years in the future by reducing
18 demand at customer facilities through the installation
19 of permanent energy efficiency measures. This
20 initiative was initially launched as a pilot program in
21 June 2003 that resulted in the Company executing
22 contracts with vendors for 47 MW of permanent demand
23 reduction. Under the 2005 Rate Plan, Con Edison was

1 authorized to expand the Targeted DSM program to
2 contract for an additional 150 MW of permanent demand
3 reduction. To date, the Company has contracted for 148
4 MW of permanent demand reductions in 40 networks and
5 other areas pursuant to three separate RFPs
6 representing 21 project deferrals. The Company's
7 contracts permit the vendors to achieve up to 10% above
8 their contractual demand reduction goals. The
9 contracts could, therefore, result in an additional 15
10 MW of demand reduction, for a potential total of 163 MW
11 (the potential for an additional 10% is not included in
12 the Company's forecast).
13 Q. Was the one-page exhibit, entitled, "Con Edison
14 Targeted DSM Program Status as of April 29, 2008"
15 prepared under your direction?
16 A. Yes, it was.
17 MARK FOR IDENTIFICATION AS EXHIBIT __ (IIP-27)
18 Q. Has the program been successful?
19 A. Yes. As shown in Exhibit __ (IIP-27), the Company
20 projects that its currently existing Targeted DSM
21 program will permanently reduce demand by 195 MW by
22 2012 (as of April 29, 40.5_MW have been installed under

1 this program, and another 17.5 MW are either installed
2 but not yet verified or the measures have been approved
3 and are awaiting pre-installation inspection). In the
4 2008 Electric Rate Order, the Commission authorized the
5 Company to contract for up to an additional 30 MW of
6 targeted energy efficiency measures, "subject to the
7 funding limits and other terms established under the
8 2005 - 2008 rate plan."
9 Q. Did the Commission also recommend an evaluation of the
10 program?
11 A. Yes, the Commission recommended an independent
12 evaluation of the Targeted Program to assess the
13 "general effectiveness of the Company's program as well
14 as the effectiveness of targeted programs versus
15 system-wide programs." The Company is proceeding with
16 its plan to complete this evaluation by November 25,
17 2008, as required by the order. The Company expects
18 that this evaluation will demonstrate that the program
19 is effective and should be continued. To date, the
20 program has resulted in the deferral of over 21
21 projects with total capital costs of approximately $234
22 million.

Q. Is the Company proposing any changes to the Targeted Program as currently constituted?

A. The Company proposes to continue the programs under the same general conditions established by the 2005 and 2008 Electric Rate Orders. The Company will in particular continue to pay, on average, $746/kW plus the value of the T&D deferral for MW achieved by contractors, so the costs will remain the same. The Company will implement any specific recommendations that result from the evaluation that will improve the program, or any other changes that will improve the program. If so, the Company will present such proposed changes to the Targeted DSM collaborative and revise its implementation plan for the program.

Q. Does the Company propose that the 30 MW annual contracting limit imposed in the 2008 Electric Rate Order be continued?

A. No. The Company notes that the amount of targeted DSM that can be effectively utilized for any given year is dependent upon the extent to which projects in the annual load relief plan can be cost effectively deferred through the installation of DSM measures. The Company believes that given the State's energy

efficiency goals, the Company should be allowed to contract for the maximum amount of cost-effective DSM that can be utilized pursuant to the applicable load relief plan. Indeed, the Commission recognized in the 2008 Electric Rate Order (at 96) that "the integration of demand response and energy efficiency into the Company's infrastructure planning should be encouraged to the extent that such measures can economically delay or displace the need for capital expenditures and provide other benefits." Accordingly, the Commission should not impose a limit on the cost-effective DSM measures that would defer T&D costs, in addition to the other benefits provided by energy efficiency programs. If a limit is imposed, it should be no less than the 150 MW three-year limit imposed in the Company's 2005 Rate Plan. Under a one-year rate plan, the limit should be no less than 75 MW. The Company proposes to continue to consult with Staff both prior to issuing requests for proposals and prior to issuing contracts, as it does now.

Q. Is the Company proposing in this rate filing to be authorized to receive any shareholder incentives for its Targeted DSM program?

A. No. The Commission decided in 2008 Electric Rate Order that incentives should be resolved as part of the EEPS proceeding and the Company has made a proposal there that it should receive a return on the benefits produced by its energy efficiency investments that is equivalent to the return provided by supply side investments. The Company expects that incentives will be resolved in that proceeding, as suggested by the Commission in the 2008 Electric Rate Order.

Q. How does the Company propose to recover the costs of its programs?

A. First, the Company proposes to continue to recover the program costs of its Targeted program through its monthly adjustment clause and, as stated above, expects that the program costs of its non-targeted program will be recovered through the $50 million that the Company was authorized to collect annually in the 2008 Rate Order. In addition, the Company is proposing incremental capital and O&M expenditures, as shown in our exhibit entitled, "Con Edison Energy Efficiency Programs," to support the Company's DSM program and continue other ongoing efforts such as the Area Profile System.

Q. Was the 1-page exhibit, entitled, "Con Edison Energy Efficiency Programs" prepared under your direction?

A. Yes, it was.

MARK FOR IDENTIFICATION AS EXHIBIT __ (IIP-28)

Q. Please explain the capital amounts shown in this exhibit.

A. There are two capital requests: (1) Development of an information technology (IT) system; and (2) enhancements to the Area Profile System.

1. IT system: The development, implementation, delivery and assessment of energy efficiency programs will require a significant investment in information technology. After taking into account the many demands associated with program development, sales and execution tracking, monitoring, verification, reporting, and compliance, Con Edison has determined that it will require a new robust and flexible program management and information system. The Company has begun a study on the precise system that it will require and the Company has begun benchmarking with other utilities to determine the amount of capital that will be required for a robust system. The capital cost for the development and implementation of this information system is currently forecasted to be

approximately $5.3 million through 2012. When completed, the information system will offer an end-to-end solution incorporating a core customer relationship management module (CRM), customized and off the shelf applications, linkages with the existing customer service system, and a significant amount of integration across internal billing and accounting operations. The system will allow for, among other things, relationship management, customer and program tracking, and customer incentive tracking.

2. Area Profile System (APS). APS is used to, among other things, identify population and household information down to specific geographic levels (e.g., zip code, block group, M&S Plate) in accordance with the Company's account information. The Company uses APS to systematically collect, assess and evaluate critical population and household impact during a contingency or system emergency, as required by one of the Staff's recommendations in Case 06-E-0894 (LIC Outage Investigation). APS had been and will continue to be used to support the development of energy efficiency programs. The data in APS can be used to evaluate customer trends and requirements.

APS had not yet been developed to its full potential and requires this capital amount ($100,000) for additional software development to expand functionality by enabling it to cover more databases and to produce reports using these additional databases.

Q. Please explain the O&M amounts shown on Exhibit __ (IIP-28).

A. First, with respect to labor, in the 2008 Electric Rate Order, the Commission authorized the Company to recover $2 million through the Monthly Adjustment Clause to begin ramping up to implement energy efficiency programs. As required by the order, on April 24, 2008, the Company submitted its report on its plan for spending the $2 million. This plan showed that Con Edison will continue to hire staff to execute the 378 MW non-targeted program submitted in the EEPS proceeding and expand the Targeted DSM program as proposed herein. Con Edison plans to hire up to five full time employees through April 1, 2009. These individuals will be experienced junior and mid-level management employees. As set forth in the April 24 report, total expenditures in the current rate year for these new hires are anticipated to be $240,000, or

1 $460,000 on an annualized basis for five employees. We
2 also plan to hire eight additional employees for a
3 total Rate Year annualized labor expense of
4 approximately $1.1 million. The new hires will be
5 involved in a number of activities, including program
6 design and development, program and contract
7 management, research, analysis, reporting, marketing,
8 outreach, customer relations and communications.
9 Second, with respect to the 500 MW DSM Program, the
10 Company is requesting $550,000 for training and website
11 development. Training funding ($350,000) will be used
12 for the on-going training of new and existing Con
13 Edison Energy Efficiency and Demand Response personnel
14 as well as training for other company personnel who
15 have regular customer contact, including Energy
16 Services and Customer Operations personnel.
17 Existing personnel will be kept up-to-date on state-of-
18 the-art energy efficiency technologies and programs.
19 New personnel will require training in the fundamentals
20 of energy efficiency so as to quickly contribute to the
21 effort in an effective manner.
22 The Energy Efficiency website development project
23 ($200,000) will increase our ability to use the

1 internet as a major platform for supporting and
2 managing energy efficiency programs. The website will
3 educate visitors and allow customers opportunities to
4 easily participate in energy efficiency and demand
5 response programs.
6 Over the longer run, the portal will be enhanced to
7 offer customer analytics and benchmarking. In
8 addition, information concerning Con Edison's existing
9 demand side management programs and demand response
10 will be included as part of the overall program
11 offering. The portal will also be a central vehicle in
12 promoting climate change activities that have made a
13 difference for the residents and businesses in New York
14 City and Westchester County.
15 Third, the Company is requesting $500,000 for smart
16 electric technologies. This funding would be used for
17 pilot measures and programs that may not otherwise
18 qualify for EEPS or Targeted DSM funding because such
19 measures are in the R&D or early deployment stage.
20 These could include energy or thermal storage
21 technologies, improved power sources for computers and
22 servers, new uses for capacitors for improving solar
23 installations, and smart and efficient end use devices.

INCENTIVE/PENALTY MECHANISMS

Q. What is the Company's proposal with respect to continuing the current penalty mechanisms for reliability, or for any other performance standards?

A. The Company proposes that a separate proceeding be conducted to discuss the detailed technical information that will demonstrate that these mechanisms need to be updated to consider several significant changes that have occurred to the Company's outage management systems (OMS) since the 1980s.

Q. Please explain why you believe the current penalty mechanisms are inappropriate.

A. The metric that establishes the Reliability Performance Thresholds ("RPT metric") is the form of SAIFI and CAIDI standards that measure the system-wide frequency and duration of outages over the year. The penalties and target levels for these mechanisms have remained at those developed when the Company had a much older technology for tracking customer outages. After the Long Island City event, the Company upgraded, tested

1 and installed a substantially modernized outage
2 management system, known as the "System Trouble
3 Analysis and Response"(STAR). This system uses maps
4 and customer information that is available on the
5 company's databases to more accurately determine the
6 number of customers affected. Although there has been
7 no actual degradation of reliable service to the
8 customers, this improvement resulted in a higher
9 measured index, resulting in a much higher probability
10 of incurring penalties at the same level of
11 performance.
12 We understand and respect Staff's position that there
13 must be clearly defined consequences for failing to
14 provide adequate service. But Staff's position is not
15 advanced by penalizing for the same level of service.
16 In fact, it is paradoxical that a utility should be
17 subject to tens of millions of dollars in penalties
18 each year because it strives to more accurately assess
19 the extent of the small number of outages that are
20 incurred.
21 Q. Please continue.
22 Staying with the objective of penalizing for failing to
23 provide adequate service, it is important to put the

1 reliability mechanism applicable to Con Edison in an
2 overall context. The fact remains that Con Edison
3 provides the highest level of reliability in the
4 country by orders of magnitude. As a result, customers
5 on our network systems enjoy reliability greater than
6 2 sigma, a 98% probability that their electric service
7 will not be interrupted.
8 The Company's network system reliability is so very
9 high that the system-wide network interruption
10 performance mechanism (Network SAIFI) allows only a
11 very low target level of customer outages before
12 penalizing the Company for outage performance. Thus,
13 a $5 million penalty is triggered if over an entire
14 year a total of just 35,418 network customers lose
15 electric service for only five minutes. This outage
16 threshold level - less than 100 customers per day - is
17 extraordinary given that Con Edison serves about 2.3
18 million customers, day in and day out, on its network
19 system.
20 Q. Are there other factors that should be considered in
21 weighing the adequacy of the penalty mechanism?
22 A. Yes, coupled with the extremely limited number of
23 customer interruptions that presently trigger a penalty

is the large number of "working parts" that need to work to avoid those interruptions. Con Edison maintains an extremely high level of reliability on a day-to-day basis even though its system is comprised of hundreds of thousands of components that can randomly fail in unpredictable combinations that on rare occasion have lead to significant network outages. Such outages, though infrequent, distort perceptions and appreciation for the Company's high level of reliability.

Q. What do you propose?

A. Assuming an penalty mechanism is required, a new standard based on more recent historical data (rather than a data set that is more than 20 years old), generated from the new OMS, could be implemented based on fair statistical principles to give confidence that the Company will face immediate financial consequences when system performance is not up to par. The new standard should reflect the statistical deviation cause by normal weather variability and other events. It is normal for mechanical and electrical systems and processes to operate with variability around the mean. This is why simply averaging past performance is not a

1 good method to set penalty targets. With an averaging
2 method, it is certain that some year's results will be
3 above the average and some year's results will be below
4 the average. These annual fluctuations are normal and
5 are driven primarily by weather and other events beyond
6 the control of the company.
7 Penalties that have been devised to punish inadequate
8 performance have actually being triggered by the
9 statistical variability of a very small fraction of
10 large populations. Setting threshold levels above and
11 below the two standard deviations would account for
12 95% of the variability of the system and although the
13 company would still be exposed 5% of the time to
14 variability risk, it is more likely that it will be
15 triggered by actual exceptional performance or true
16 degradation of service rather than merely the result
17 of random events.
18 Q. What about the magnitude of the penalties?
19 A. The Company also sees no justification to increasing
20 the penalties from current levels. Con Edison is very
21 focused on reliability and other service quality
22 measures. In fact, Company employees see the focus as
23 their greatest strength, and they take pride in the

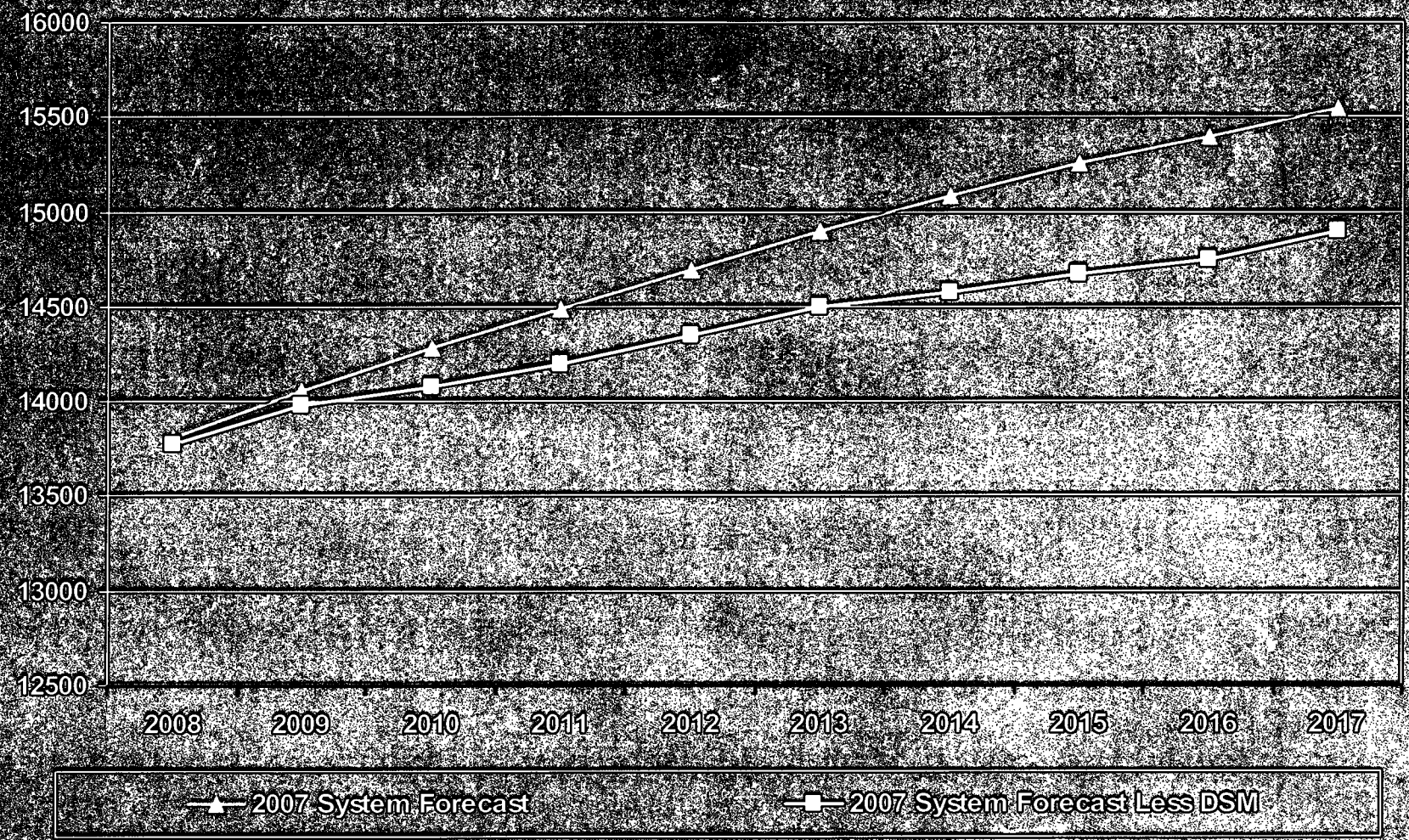
1 service they perform. The reporting and tracking of
2 reliability statistics required by regulatory
3 commissions has helped, no doubt, focus the industry on
4 the importance of service reliability. However, large
5 penalties do not provide the Company with additional
6 incentives to deliver reliable service to its customers
7 and, therefore, could be characterized as punitive and
8 unnecessary. A large adjustment to the current penalty
9 amounts could create a perverse incentive for the
10 Company to act contrary to the best interests of
11 customers in order to avoid the risk of a penalty.
12 Since customers ultimately pay all costs (and gain all
13 benefits), the overall policy of increased penalties is
14 self-defeating and shortsighted.
15 Q. Please continue.
16 A. Rate of return is beyond the scope of this testimony,
17 but the Commission's policy of allowing low rates of
18 return, low in comparison to other regulatory bodies,
19 is well known. It is my understanding, too, that the
20 Commission's policy towards penalty mechanisms is
21 aggressive compared to other regulatory bodies. I
22 would think that a policy of low returns and high

penalties should be reviewed on a regular basis for overall reasonableness.

Ten – Year Peak Load Forecast

Exhibit__ (JIP-1)
Page 1 of 7

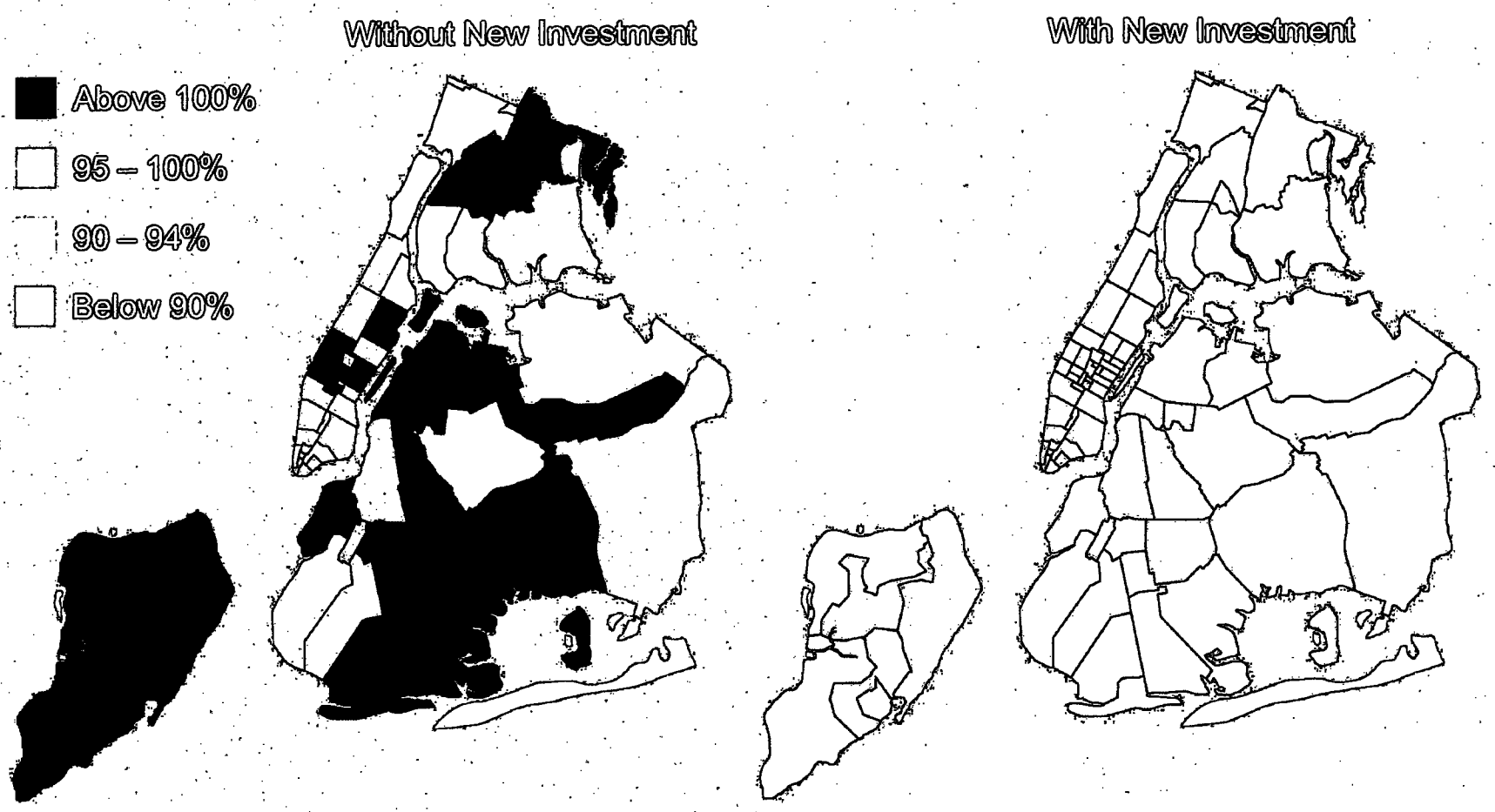
(2008-2017)



conEdison

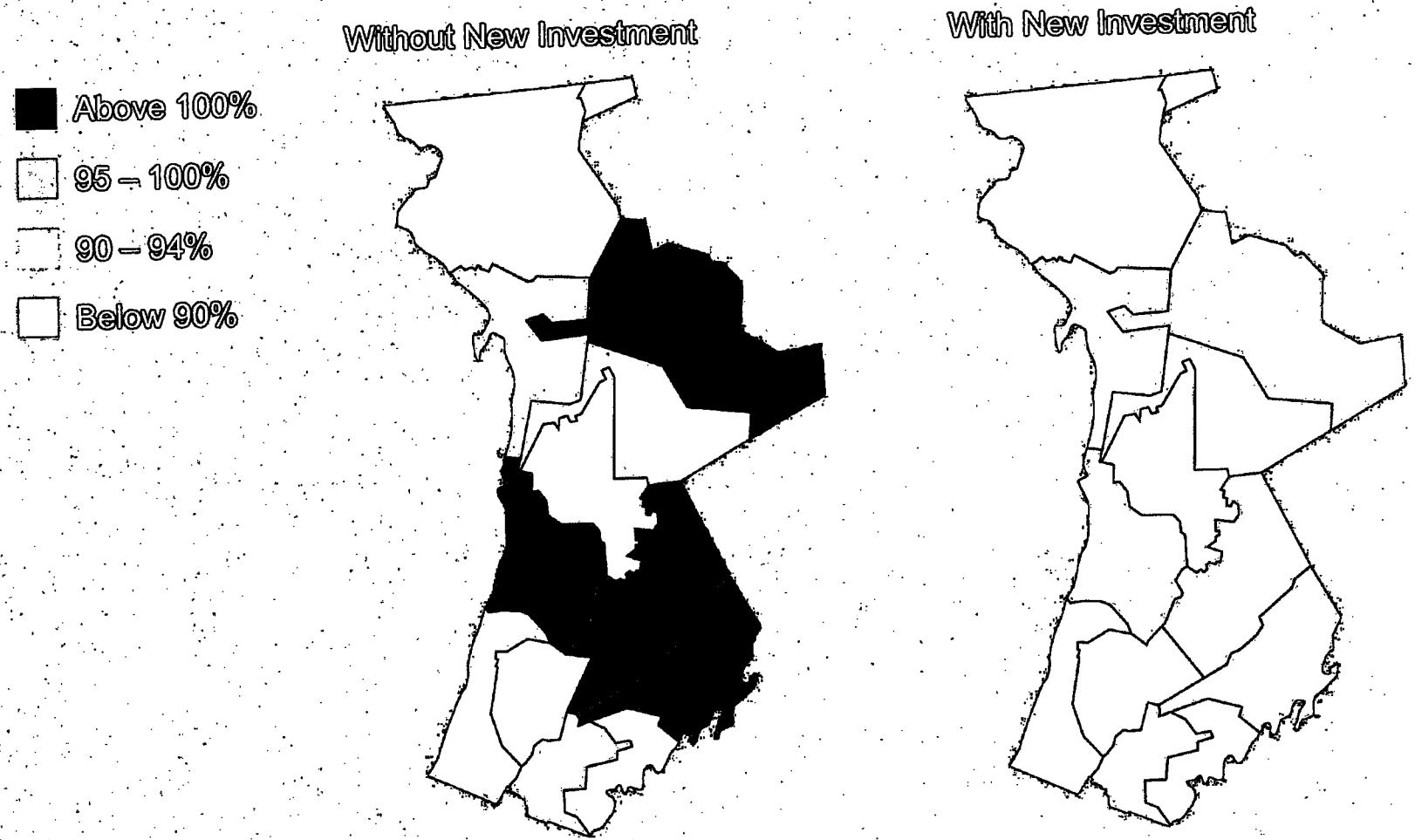
ON IT

New York City Load Areas – Summer 2017
With Demand Side Management



Westchester Load Areas – Summer 2017

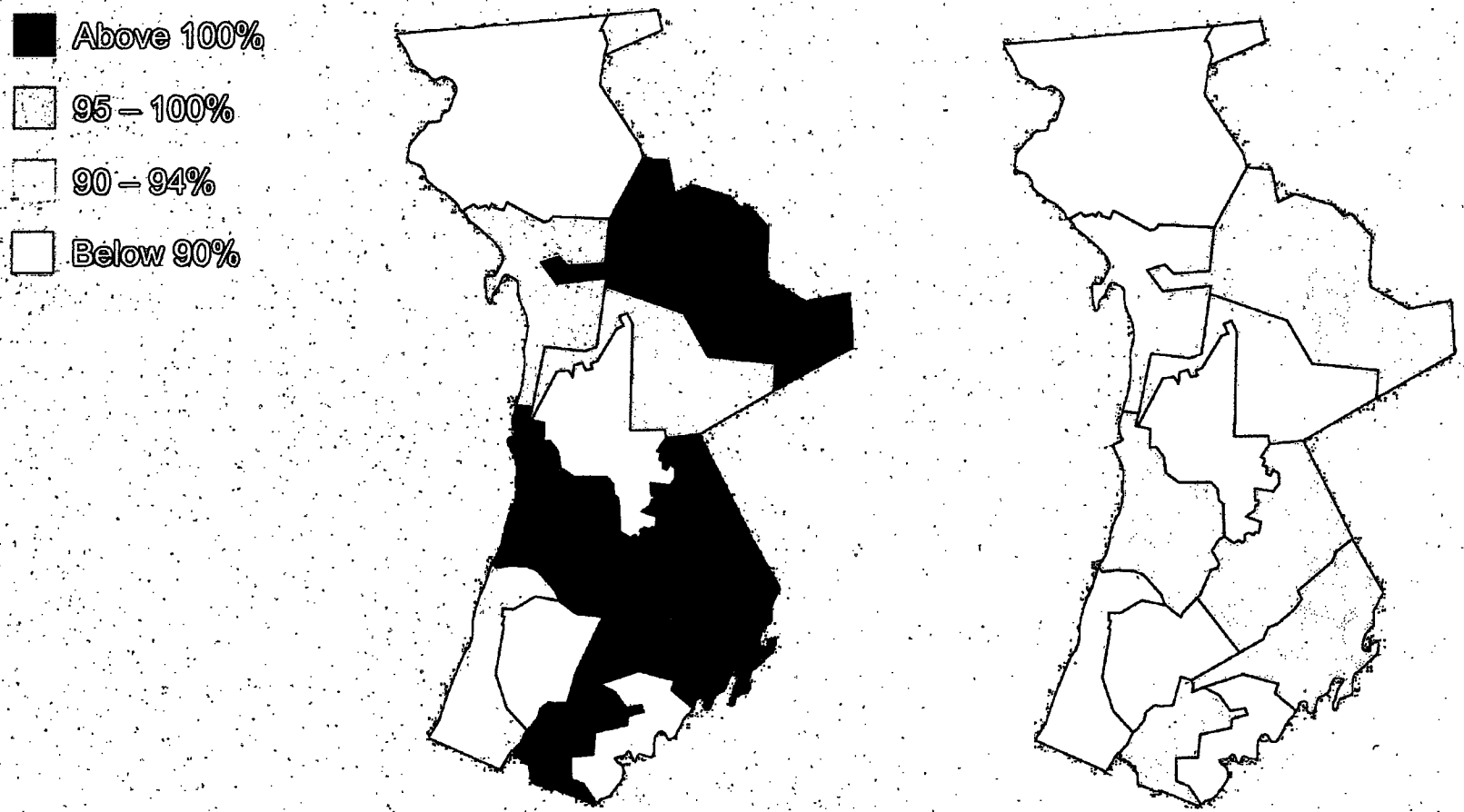
With Demand Side Management



Westchester Load Areas – Summer 2017

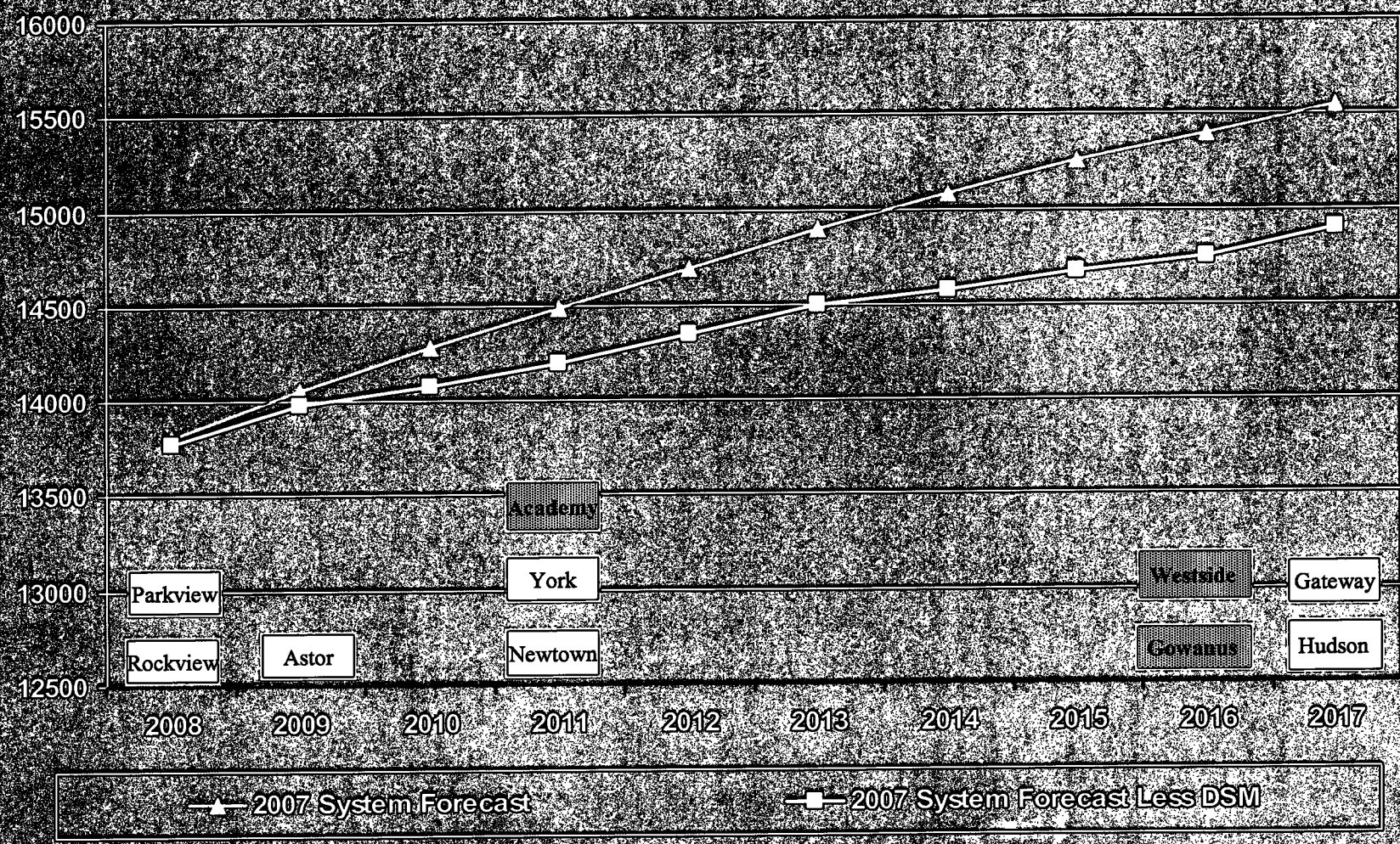
Without New Investment
Without Demand Side Management

With New Investment
With Demand Side Management

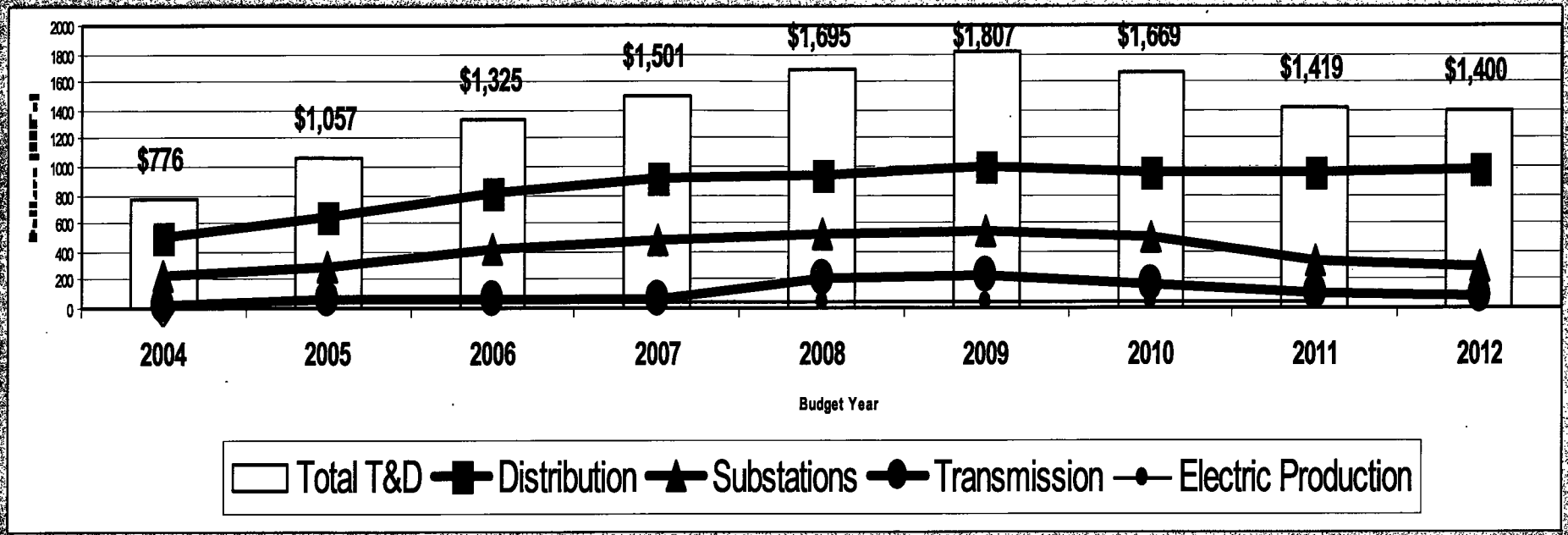


Ten – Year Peak Load Forecast

(2008-2017)



Capital Spending (Historical & Required)



CONSOLIDATED EDISON COMPANY OF NEW YORK, INC.
SUBSTATION OPERATIONS CAPITAL PROJECTS

	$000s			
	RATE CASE SUBMISSION			
DESCRIPTION	2009	2010	2011	3 YEAR TOTAL
SUPPORT ECONOMIC GROWTH	**$ 317,000**	**$ 263,000**	**$ 127,000**	**$ 707,000**
Astor-Establish New Area Substation	6,000	-	-	6,000
York-Establish New Area Substation	137,000	106,000	4,000	247,000
Transformer Cooling Program	1,000	-	1,000	2,000
Woodrow-Install Third Transformer And Fresh Kills Expand 138kV Station	22,000	6,000	-	28,000
Newtown-Establish Station	72,000	56,000	4,000	132,000
Westside-Establish New Transmission Station	-	-	100,000	100,000
Emergent Load Relief Program	3,000	3,000	3,000	9,000
Hudson Yards-Establish New Substation	30,000	30,000	-	60,000
Gateway-Establish New Area Substation	7,000	-	-	7,000
Corona-Install Transformer No. 10	10,000	13,000	-	23,000
Corona-Replace Transformer No. 7	-	-	5,000	5,000
Millwood W-Replace Limiting 13kV Bus	-	1,000	1,000	2,000
Parkchester-Install 4th Transformer	3,000	12,000	5,000	20,000
Parkchester-Install 3rd Cap Bank	1,000	1,000	-	2,000
GENERATION INTERCONNECTION				
Astoria East-Install Phase Angle Regulator	14,000	20,000	2,000	36,000
Corona-Install Series Reactor	11,000	15,000	2,000	28,000
Sub-Total	**$ 317,000**	**$ 263,000**	**$ 127,000**	**$ 707,000**
				-

CONSOLIDATED EDISON COMPANY OF NEW YORK, INC.
SUBSTATION OPERATIONS CAPITAL PROJECTS

	$000s			
	RATE CASE SUBMISSION			
DESCRIPTION	2009	2010	2011	3 YEAR TOTAL
SYSTEM AND COMPONENT PERFORMANCE	**$ 199,615**	**$ 194,085**	**$ 165,435**	**$ 559,135**
EQUIPMENT				
Elmsford-Install New Substation (need 138kV Bus Revamp)	37,000	36,000	8,000	81,000
Corona - Install Additional 138kV Breakers	-	5,000	-	5,000
Condition Based Monitoring Equipment	250	250	250	750
Obsolete 138kV Circuit Breaker Program	11,700	11,700	11,700	35,100
Obsolete Circuit Switcher Replacement	500	500	500	1,500
Replace 345kV Circuit Breaker Other Than ATB	8,000	8,000	8,000	24,000
Replace Disconnect Switches	4,600	4,600	4,800	14,000
Replace Obsolete Transformers	13,000	21,000	21,000	55,000
Replace Overdutied 13/27kV Circuit Breaker Programs	10,800	10,800	10,800	32,400
Failed Transformer Program	33,960	22,285	20,285	76,530
Rainey-Replace Temp Transformer With Permanent	4,000	-	-	4,000
Failed Equipment Other Than Transformers	1,500	1,500	1,500	4,500
Sub-Total	**$ 125,310**	**$ 121,635**	**$ 86,835**	**$ 333,780**
RELAY				
Control Cable Upgrade Program	1,000	1,000	1,000	3,000
Relay Modifications	5,500	5,500	5,500	16,500
Upgrade Analog Circuits To Digital Fiber	2,000	2,000	1,800	5,800
Sub-Total	**$ 8,500**	**$ 8,500**	**$ 8,300**	**$ 25,300**

CONSOLIDATED EDISON COMPANY OF NEW YORK, INC.
SUBSTATION OPERATIONS CAPITAL PROJECTS

	$000s			
	RATE CASE SUBMISSION			
DESCRIPTION	2009	2010	2011	3 YEAR TOTAL
MISCELLANEOUS COMPONENTS				
Additional G&T Devices	1,000	1,000	1,000	3,000
Area Substation Reliability And Auto Ground Circuit Switchers	10,500	10,500	10,500	31,500
Battery & Rectifier Replacement	3,500	3,500	3,500	10,500
Capacitor Cable Upgrade Program	3,000	3,000	3,000	9,000
Category Alarms	2,250	2,250	3,900	8,400
Construct Relay Enclosure Houses	1,500	1,500	1,500	4,500
Corona Settlement	1,000	1,000	-	2,000
Diesels / Blackstart Restoration (Phase 2) - Upgrade Station L & P	1,200	1,000	1,000	3,200
East River Complex - Install Wall	2,500	2,500	-	5,000
Various-Facility Upgrade	8,000	8,000	8,000	24,000
Fire Pump Test Header Installation	500	500	500	1,500
High Voltage Test Sets	5,000	2,000	2,000	9,000
New Maximo Upgrade	400	-	-	400
Rapid Restore Enhancements- Mapping/Modeling System	200	200	200	600
Reinforced Ground Grid	500	500	500	1,500
Revenue Metering Upgrade	500	500	500	1,500
Roof Replacement Program	3,000	3,000	2,100	8,100
Small Capital Equipment Program	4,000	4,000	4,000	12,000
SOCCS - RTU Replacement	3,000	3,000	-	6,000
Substation Automation Target Information System	2,000	2,000	2,000	6,000
East River-Protection System Upgrade	3,500	3,500	3,100	10,100
Buchanan-Substation Continuance	-	-	10,000	10,000
E179th Street-Substation Continuance	-	2,500	5,000	7,500
E 63rd Street-Substation Continuance	5,000	5,000	5,000	15,000
White Plains-Substation Continuance	550	-	-	550
Substation Loss Contingency	2,000	2,000	2,000	6,000

CONSOLIDATED EDISON COMPANY OF NEW YORK, INC.
SUBSTATION OPERATIONS CAPITAL PROJECTS

	$000s			
	RATE CASE SUBMISSION			
DESCRIPTION	2009	2010	2011	3 YEAR TOTAL
Switchgear Enclosure Upgrade Program	500	500	500	1,500
Technology Improvements	705	500	500	1,705
Sub-Total	$ 65,805	$ 63,950	$ 70,300	$ 200,055
				-
PUBLIC SAFETY AND ENVIRONMENTAL	$ 15,000	$ 15,000	$ 15,000	$ 45,000
Environmental Risk Mitigation	3,500	3,500	3,500	10,500
Pumping Plant Improvement	8,500	8,500	8,500	25,500
PURS Supervisory Control & Data Acquisition	3,000	3,000	3,000	9,000
Sub-Total	$ 15,000	$ 15,000	$ 15,000	$ 45,000
				-
SECURITY	$ 4,100	$ 4,000	$ 4,000	$ 12,100
Security Enhancements	4,100	4,000	4,000	12,100
Sub-Total	$ 4,100	$ 4,000	$ 4,000	$ 12,100
				-
TOTAL SUBSTATION OPERATIONS	535,715	476,085	311,435	1,323,235

CONSOLIDATED EDISON COMPANY OF NEW YORK, INC.
SUBSTATION OPERATIONS CAPITAL PROJECTS

	$000s				
	2008 - 2012 Five Year Plan				
DESCRIPTION	2008	2009	2010	2011	2012
SUPPORT ECONOMIC GROWTH	**$ 333,150**	**$ 317,000**	**$ 263,000**	**$ 127,000**	**$ 114,000**
Mott Haven-Establish 345kV Transmission And Area Stations	8,000	-	-	-	-
Parkview-Establish New Area Substation	93,750	-	-	-	-
Rockview-Establish New Area Substation (Yonkers)	18,000	-	-	-	-
Astor-Establish New Area Substation	33,000	6,000	-	-	-
York-Establish New Area Substation	79,000	137,000	106,000	4,000	-
Cedar St-Third Transformer And 138kV Feeder	2,400	-	-	-	-
Fox Hills-Install Two New Feeder Positions	3,000	-	-	-	-
Transformer Cooling Program	1,000	1,000	-	1,000	1,000
Woodrow-Install Third Transformer And Fresh Kills Expand 138kV Station	16,500	22,000	6,000	-	-
Newtown-Establish Station	59,000	72,000	56,000	4,000	-
Westside-Establish New Transmission Station	-	-	-	100,000	100,000
Nevins-New Substation - Site Preparation	3,000	-	-	-	-
Land Acquisition For Future New Substations	5,000	-	-	-	5,000
Emergent Load Relief Program	3,000	3,000	3,000	3,000	3,000
Bensonhurst-Install 5th Transformer 138kV Feeder and Cooling Plant	1,500	-	-	-	-
Hudson Yards-Establish New Substation	-	30,000	30,000	-	-
Gateway-Establish New Area Substation	-	7,000	-	-	-
Corona-Install Transformer No. 10	7,000	10,000	13,000	-	-
Corona-Replace Transformer No. 7	-	-	-	5,000	5,000
Millwood W-Replace Limiting 13kV Bus	-	-	1,000	1,000	-
Parkchester-Install 4th Transformer	-	3,000	12,000	5,000	-
Parkchester-Install 3rd Cap Bank	-	1,000	1,000	-	-
GENERATION INTERCONNECTION					
Astoria East-Install Phase Angle Regulator	-	14,000	20,000	2,000	-
Corona-Install Series Reactor	-	11,000	15,000	2,000	-
Sub-Total	**$ 333,150**	**$ 317,000**	**$ 263,000**	**$ 127,000**	**$ 114,000**
SYSTEM AND COMPONENT PERFORMANCE	**$ 160,995**	**$ 199,615**	**$ 194,085**	**$ 165,435**	**$ 152,520**
EQUIPMENT					
Elmsford-Install New Substation (need 138kV Bus Revamp)	20,000	37,000	36,000	8,000	750
Corona - Install Additional 138kV Breakers	-	-	5,000	-	-
Condition Based Monitoring Equipment	250	250	250	250	250

CONSOLIDATED EDISON COMPANY OF NEW YORK, INC.
SUBSTATION OPERATIONS CAPITAL PROJECTS

	$000s				
	2008 - 2012 Five Year Plan				
DESCRIPTION	**2008**	**2009**	**2010**	**2011**	**2012**
Obsolete 138kV Circuit Breaker Program	7,700	11,700	11,700	11,700	11,700
Obsolete Circuit Switcher Replacement	500	500	500	500	500
Replace 345kV Circuit Breaker Other Than ATB	7,000	8,000	8,000	8,000	8,000
Replace Disconnect Switches	2,900	4,600	4,600	4,800	4,800
Replace Obsolete Transformers	17,200	13,000	21,000	21,000	21,000
Replace Overdutied 13/27kV Circuit Breaker Programs	8,800	10,800	10,800	10,800	10,800
Failed Transformer Program	21,200	33,960	22,285	20,285	12,000
Rainey-Replace Temp Transformer With Permanent	-	4,000	-	-	-
Failed Equipment Other Than Transformers	1,500	1,500	1,500	1,500	1,500
Sub-Total	**$ 87,050**	**$ 125,310**	**$ 121,635**	**$ 86,835**	**$ 71,300**
RELAY					
Control Cable Upgrade Program	1,000	1,000	1,000	1,000	1,000
Modify Auto Underfrequency Loadshedding	1,385	-	-	-	-
Reduce Fault Clearing Time Program	5,200	-	-	-	-
Relay Modifications	2,500	5,500	5,500	5,500	5,500
Upgrade Analog Circuits To Digital Fiber	2,000	2,000	2,000	1,800	-
Sub-Total	**$ 12,085**	**$ 8,500**	**$ 8,500**	**$ 8,300**	**$ 6,500**
MISCELLANEOUS COMPONENTS					
Additional G&T Devices	1,000	1,000	1,000	1,000	1,000
Area Substation Reliability And Auto Ground Circuit Switchers	8,500	10,500	10,500	10,500	10,500
Battery & Rectifier Replacement	3,500	3,500	3,500	3,500	3,500
Capacitor Cable Upgrade Program	3,000	3,000	3,000	3,000	3,000
Category Alarms	2,250	2,250	2,250	3,900	3,900
Construct Relay Enclosure Houses	1,500	1,500	1,500	1,500	1,500
Corona Settlement	1,000	1,000	1,000	-	-
Diesels / Blackstart Restoration (Phase 2) - Upgrade Station L & P	600	1,200	1,000	1,000	1,000
East River Complex - Install Wall	-	2,500	2,500	-	-
Various-Facility Upgrade	6,000	8,000	8,000	8,000	8,000
Fire Pump Test Header Installation	500	500	500	500	500
High Voltage Test Sets	6,500	5,000	2,000	2,000	2,000
Jamaica-Install 138kV Breakers 7 & 8 and Third Cap Bank	3,000	-	-	-	-
New Maximo Upgrade	400	400	-	-	-

CONSOLIDATED EDISON COMPANY OF NEW YORK, INC.
SUBSTATION OPERATIONS CAPITAL PROJECTS

	$000s				
	2008 - 2012 Five Year Plan				
DESCRIPTION	2008	2009	2010	2011	2012
Rapid Restore Enhancements- Mapping/Modeling System	200	200	200	200	200
Reinforced Ground Grid	500	500	500	500	500
Revenue Metering Upgrade	500	500	500	500	500
Roof Replacement Program	3,000	3,000	3,000	2,100	2,100
Small Capital Equipment Program	6,000	4,000	4,000	4,000	4,000
SOCCS - RTU Replacement	3,000	3,000	3,000	-	-
Substation Automation Target Information System	2,000	2,000	2,000	2,000	2,000
East River-Protection System Upgrade	3,000	3,500	3,500	3,100	2,520
Buchanan-Substation Continuance	-	-	-	10,000	10,000
E179th Street-Substation Continuance	-	-	2,500	5,000	5,000
E 63rd Street-Substation Continuance	2,500	5,000	5,000	5,000	5,000
White Plains-Substation Continuance	-	550	-	-	-
Parkchester-Substation Continuance	-	-	-	-	5,000
Substation Loss Contingency	2,000	2,000	2,000	2,000	2,000
Switchgear Enclosure Upgrade Program	500	500	500	500	500
Technology Improvements	310	705	500	500	500
Fresh Kills-Upgrade 13kV L&P Transformer	600	-	-	-	-
Sub-Total	$ 61,860	$ 65,805	$ 63,950	$ 70,300	$ 74,720
PUBLIC SAFETY AND ENVIRONMENTAL	$ 13,500	$ 15,000	$ 15,000	$ 15,000	$ 15,000
SPCC Plan for Transmission Cable System	500	-	-	-	-
Environmental Risk Mitigation	3,500	3,500	3,500	3,500	3,500
Pumping Plant Improvement	8,500	8,500	8,500	8,500	8,500
PURS Supervisory Control & Data Acquisition	1,000	3,000	3,000	3,000	3,000
Sub-Total	$ 13,500	$ 15,000	$ 15,000	$ 15,000	$ 15,000
SECURITY	$ 4,100	$ 4,100	$ 4,000	$ 4,000	$ 4,000
Security Enhancements	4,100	4,100	4,000	4,000	4,000
Sub-Total	$ 4,100	$ 4,100	$ 4,000	$ 4,000	$ 4,000
TOTAL SUBSTATION OPERATIONS	**511,745**	**535,715**	**476,085**	**311,435**	**285,520**

CONSOLIDATED EDISON COMPANY OF NEW YORK, INC.
SUBSTATION OPERATIONS O&M PROGRAMS

	$000s				
	Rate Case Submission				
Program Description	Forecast RYE 2009	Forecast RYE 2010	Forecast RYE 2011	Forecast RYE 2012	Forecast RYE 2013
Support Economic Growth	**$ 4,701**	**$ 5,212**	**$ 5,870**	**$ 6,400**	**$ 6,400**
SSO Staffing - New Facilities	4,701	5,212	5,870	6,400	6,400
Sub-Total	**$ 4,701**	**$ 5,212**	**$ 5,870**	**$ 6,400**	**$ 6,400**
System and Component Performance	**$ 3,966**	**$ 7,052**	**$ 6,937**	**$ 6,657**	**$ 6,697**
Bus Enclosure	-	1,048	1,048	1,048	1,048
Corrective Maintenance Normalization	-	1,400	1,400	1,400	1,400
Dynamic Feeder Rating System	165	215	255	295	335
Field Operation Trainers	153	154	154	154	154
Operator Staffing Augmentation for Existing Facilities	1,648	1,760	1,760	1,760	1,760
Structural Integrity / Station Betterment	2,000	2,475	2,320	2,000	2,000
Sub-Total	**$ 3,966**	**$ 7,052**	**$ 6,937**	**$ 6,657**	**$ 6,697**
Public Safety and Environmental	**$ 555**	**$ 541**	**$ 541**	**$ 541**	**$ 541**
SF6 Gas Emissions Reduction Program	200	200	200	200	200
Flame Retardant Clothing	355	341	341	341	341
Sub-Total	**$ 555**	**$ 541**	**$ 541**	**$ 541**	**$ 541**
Advanced Technology	**$ 1,272**	**$ 1,797**	**$ 1,983**	**$ 2,368**	**$ 2,418**
Digital Fiber Optics/ System Expansion	480	967	1,103	1,438	1,438
Advanced Control Systems Group	792	830	880	930	980
Sub-Total	**$ 1,272**	**$ 1,797**	**$ 1,983**	**$ 2,368**	**$ 2,418**
Total of Programs Listed Above for Substation Operations	**$10,494**	**$14,602**	**$15,331**	**$15,966**	**$16,056**

CONSOLIDATED EDISON COMPANY OF NEW YORK, INC.
SUBSTATION OPERATIONS O&M PROGRAMS

	$000s			
	2007 HISTORY - RYE 2010			
Program Description	2007 Historical Spending for Rate Case Request	Requested Amount Approved in 2008 Rate Case	Program Changes 2010	Forecast RYE 2010
Support Economic Growth	**$ 315**	**$ 4,701**	**$ 4,897**	**$ 5,212**
SSO Staffing - New Facilities	315	4,701	4,897	5,212
Sub-Total	**$ 315**	**$ 4,701**	**$ 4,897**	**$ 5,212**
System and Component Performance	**$ 635**	**$ 3,966**	**$ 6,417**	**$ 7,052**
Bus Enclosure	550	New	498	1,048
Corrective Maintenance Normalization	-	New	1,400	1,400
Dynamic Feeder Rating System	85	165	130	215
Field Operation Trainers	-	153	154	154
Operator Staffing Augmentation for Existing Facilities	-	1,648	1,760	1,760
Structural Integrity / Station Betterment	-	2,000	2,475	2,475
Sub-Total	**$ 635**	**$ 3,966**	**$ 6,417**	**$ 7,052**
Public Safety and Environmental	**$ 189**	**$ 555**	**$ 352**	**$ 541**
SF6 Gas Emissions Reduction Program	76	200	124	200
Flame Retardant Clothing	113	355	228	341
Sub-Total	**$ 189**	**$ 555**	**$ 352**	**$ 541**
Advanced Technology	**$ 751**	**$ 1,272**	**$ 1,046**	**$ 1,797**
Telecommunications (Digital Fiber Optics/ System Expansion)	751	480	216	967
Advanced Control Systems Group	-	792	830	830
Sub-Total	**$ 751**	**$ 1,272**	**$ 1,046**	**$ 1,797**
Total of Programs Listed Above for Substation Operations	**$1,890**	**$10,494**	**$12,712**	**$14,602**

CONSOLIDATED EDISON COMPANY OF NEW YORK, INC.
SYSTEM AND TRANSMISSION OPERATIONS CAPITAL PROJECTS
TRANSMISSION OPERATIONS CAPITAL PROJECTS / PROGRAMS

	$000s			
	Rate Case Submission			
DESCRIPTION	2009	2010	2011	3 Year Total
SUPPORT ECONOMIC GROWTH	**$ 21,144**	**$ 23,000**	**$ 1,000**	**$ 45,144**
Vernon - W49th St-38M72 Upgrade	20,144	22,000	-	42,144
Dynamic Feeder Rating	1,000	1,000	1,000	3,000
Sub-Total	**$ 21,144**	**$ 23,000**	**$ 1,000**	**$ 45,144**
SYSTEM AND COMPONENT PERFORMANCE	**$ 184,300**	**$ 140,300**	**$ 87,600**	**$ 412,200**
179th St-Reinforcement - M29 (Includes Academy)	130,000	75,000	15,000	220,000
Sprain Brook - W 49th St-Feeder M51	6,700	6,700	-	13,400
Cable System Enhancement - Pothead Alarms	500	500	500	1,500
Replace 69M43/69M44 With 38M53 & 38M54	3,000	-	-	3,000
Reinforce Hudson River Crossing Towers	3,000	2,400	1,800	7,200
Replacement of Feeders 18001 & 18002	21,000	30,000	20,000	71,000
Emergent Transmission Reliability	10,000	10,000	10,000	30,000
Replace Feeder 69M41 & 69M45	-	-	6,000	6,000
Re-Conductor Dunwoodie – Sprain Brook Transmission Corridor	1,500	4,000	4,000	9,500
Manhattan-Replace 69kV Feeders On QBB	-	3,000	14,000	17,000
Feeder 34182/4	-	-	5,000	5,000
Staten Island-Feeders 38R51 And 38R52	-	-	4,000	4,000
Transmission Feeder Failures	5,000	5,000	5,000	15,000
Upgrade Overhead 345kV Transmission Structures	2,100	2,200	2,300	6,600
Staten Island-M-Line Tower Relocation	1,500	1,500	-	3,000
Sub-Total	**$ 184,300**	**$ 140,300**	**$ 87,600**	**$ 412,200**
PUBLIC SAFETY AND ENVIRONMENTAL	**$ 1,750**	**$ 1,750**	**$ 1,750**	**$ 5,250**
DEC Program Line	1,750	-	-	1,750
Environmental Enhancements	-	1,750	1,750	3,500
Sub-Total	**$ 1,750**	**$ 1,750**	**$ 1,750**	**$ 5,250**
TOTAL TRANSMISSION OPERATIONS	**$ 207,194**	**$ 165,050**	**$ 90,350**	**$ 462,594**

CONSOLIDATED EDISON COMPANY OF NEW YORK, INC.
SYSTEM AND TRANSMISSION OPERATIONS CAPITAL PROJECTS
TRANSMISSION OPERATIONS CAPITAL PROJECTS / PROGRAMS

	$000s				
	2008 - 2012 Five Year Plan				
DESCRIPTION	2008	2009	2010	2011	2012
SUPPORT ECONOMIC GROWTH	**$ 5,200**	**$ 21,144**	**$ 23,000**	**$ 1,000**	**$ 1,000**
Vernon - W49th St-38M72 Upgrade	4,200	20,144	22,000	-	-
Dynamic Feeder Rating	1,000	1,000	1,000	1,000	1,000
Sub-Total	**$ 5,200**	**$ 21,144**	**$ 23,000**	**$ 1,000**	**$ 1,000**
SYSTEM AND COMPONENT PERFORMANCE	**$ 180,900**	**$ 184,300**	**$ 140,300**	**$ 87,600**	**$ 81,400**
179th St-Reinforcement - M29 (Includes Academy)	143,000	130,000	75,000	15,000	-
Sprain Brook - W 49th St-Feeder M51	6,700	6,700	6,700	-	-
Cable System Enhancement - Pothead Alarms	500	500	500	500	-
Millwood-Replace Wood Poles W/Steel Poles	4,000	-	-	-	-
Replace 69M43/69M44 With 38M53 & 38M54	3,700	3,000	-	-	-
Reinforce Hudson River Crossing Towers	2,400	3,000	2,400	1,800	-
Replacement of Feeders 18001 & 18002	5,000	21,000	30,000	20,000	-
Emergent Transmission Reliability	5,000	10,000	10,000	10,000	10,000
Replace Feeder 69M41 & 69M45	-	-	-	6,000	18,000
Re-Conductor Dunwoodie – Sprain Brook Transmission Corridor	2,000	1,500	4,000	4,000	-
Manhattan-Replace 69kV Feeders On QBB	-	-	3,000	14,000	13,000
Feeder 34182/4	-	-	-	5,000	20,000
Staten Island-Feeders 38R51 And 38R52	-	-	-	4,000	13,000
Transmission Feeder Failures	5,000	5,000	5,000	5,000	5,000
Upgrade Overhead 345kV Transmission Structures	2,100	2,100	2,200	2,300	2,400
Staten Island-M-Line Tower Relocation	1,500	1,500	1,500	-	-
Sub-Total	**$ 180,900**	**$ 184,300**	**$ 140,300**	**$ 87,600**	**$ 81,400**
PUBLIC SAFETY AND ENVIRONMENTAL	**$ 1,750**	**$ 1,750**	**$ 1,750**	**$ 1,750**	**$ 1,750**
DEC Program Line	1,750	1,750	-	-	-
Environmental Enhancements	-	-	1,750	1,750	1,750
Sub-Total	**$ 1,750**	**$ 1,750**	**$ 1,750**	**$ 1,750**	**$ 1,750**
TOTAL TRANSMISSION OPERATIONS	**$ 187,850**	**$ 207,194**	**$ 165,050**	**$ 90,350**	**$ 84,150**

CONSOLIDATED EDISON COMPANY OF NEW YORK, INC.
SYSTEM & TRANSMISSION OPERATIONS O&M PROGRAMS

	$000s				
	Rate Case Submission				
Title	Forecast RYE 2009	Forecast RYE 2010	Forecast RYE 2011	Forecast RYE 2012	Forecast RYE 2013
SUPPORT ECONOMIC GROWTH	$ 100	$ 100	$ 100	$ 100	$ 100
Sequencing and Scheduling - Add 3rd District Operator (DO)	100	100	100	100	100
Sub-Total	$ 100	$ 100	$ 100	$ 100	$ 100
SYSTEM AND COMPONENT PERFORMANCE	$ 3,516	$ 15,321	$ 15,321	$ 16,051	$ 16,051
Coating Refurbishment	-	1,500	1,500	1,500	1,500
Conductor Repairs	450	450	450	1,450	1,450
ECC facility maintenance costs	2,100	2,150	2,150	2,150	2,150
ECC Trainer / Compliance Monitor Position	-	125	125	125	125
Feeder Emergencies	-	7,826	7,826	7,826	7,826
Install Bird Discouragers on Selected Portions of P & F Line	270	270	270	-	-
Normalized Human Resources	-	2,322	2,322	2,322	2,322
Overhead Line Inspections	278	278	278	278	278
Tower Painting	140	140	140	140	140
Transmission Planning Studies	118	100	100	100	100
Transmission reliability - industry group fees	160	160	160	160	160
Sub-Total	3,516	15,321	15,321	16,051	16,051
PUBLIC SAFETY AND ENVIRONMENTAL	$ 1,550	$ 1,550	$ 1,550	$ 1,550	$ 1,550
Manhole Inspections	950	950	950	950	950
PFT Patrols - New Environmental Program	600	600	600	600	600
Sub-Total	1,550	1,550	1,550	1,550	1,550
IMPROVE STORM RESPONSE	$ 700	$ 700	$ 700	$ 250	$ 250
Improve Overhead Transmission Restoration Capability	700	700	700	250	250
Sub-Total	$ 700	$ 700	$ 700	$ 250	$ 250
ADVANCED TECHNOLOGY	$ 6,350	$ 6,355	$ 6,355	$ 6,355	$ 6,355
AECC equipment support and maintenance	400	400	400	400	400
Communications Infrastructure	5,100	5,100	5,100	5,100	5,100
NERC and EMS Training	150	155	155	155	155
New EMS system license maintenance	700	700	700	700	700
Sub-Total	$ 6,350	$ 6,355	$ 6,355	$ 6,355	$ 6,355
PROCESS IMPROVEMENT	$ 625	$ 625	$ 625	$ 369	$ 369
1 Additional HR for NYISO functions	100	100	100	100	100
Conductor Cart Training	75	75	75	-	-
Live Line Maintenance Procedures	175	175	175	44	44
Training Specialist for TLM Training Programs	125	125	125	125	125
Update Plan and Profile Drawings	50	50	50	-	-
ENHANCED CUSTOMER SERVICE					
Training for Emergency CIG	100	100	100	100	100
Sub-Total	$ 625	$ 625	$ 625	$ 369	$ 369
Total of Programs Listed Above for System & Transmission Operations	$ 12,841	$ 24,651	$ 24,651	$ 24,675	$ 24,675

CONSOLIDATED EDISON COMPANY OF NEW YORK, INC.
SYSTEM & TRANSMISSION OPERATIONS O&M PROGRAMS

	$000s			
	2007 HISTORY - RYE 2010			
Title	2007 Historical Spending per Rate Case Request	Requested Amount Approved in 2008 Rate Case	Program Changes 2010	Forecast RYE 2010
SUPPORT ECONOMIC GROWTH	$ -	$ 100	$ 100	$ 100
Sequencing and Scheduling - Add 3rd District Operator (DO)	-	100	100	100
Sub-Total	$ -	$ 100	$ 100	$ 100
SYSTEM AND COMPONENT PERFORMANCE	$ 7,851	$ 3,516	$ 7,470	$ 15,321
Coating Refurbishment	473	New	1,027	1,500
Conductor Repairs	230	450	220	450
ECC facility maintenance costs	2,068	2,100	82	2,150
ECC Trainer / Compliance Monitor Position	-	New	125	125
Feeder Emergencies	4,808	New	3,018	7,826
Install Bird Discouragers on Selected Portions of P & F Line	-	270	270	270
Normalized Human Resources	-	New	2,322	2,322
Overhead Line Inspections	145	278	133	278
Tower Painting	-	140	140	140
Transmission Planning Studies	21	118	79	100
Transmission reliability - industry group fees	106	160	54	160
Sub-Total	7,851	3,516	7,470	15,321
PUBLIC SAFETY AND ENVIRONMENTAL	$ 453	$ 1,550	$ 1,097	$ 1,550
Manhole Inspections	453	950	497	950
PFT Patrols	-	600	600	600
Sub-Total	453	1,550	1,097	1,550
IMPROVE STORM RESPONSE	$ -	$ 700	$ 700	$ 700
Improve Overhead Transmission Restoration Capability	-	700	700	700
Sub-Total	$ -	$ 700	$ 700	$ 700
ADVANCED TECHNOLOGY	$ 4,750	$ 6,350	$ 1,605	$ 6,355
AECC equipment support and maintenance	102	400	298	400
Communications Infrastructure	4,557	5,100	543	5,100
NERC and EMS Training	91	150	64	155
New EMS system license maintenance	-	700	700	700
Sub-Total	$ 4,750	$ 6,350	$ 1,605	$ 6,355
PROCESS IMPROVEMENT	$ -	$ 625	$ 625	$ 625
1 Additional HR for NYISO functions	-	100	100	100
Conductor Cart Training	-	75	75	75
Live Line Maintenance Procedures	-	175	175	175
Training Specialist for TLM Training Programs	-	125	125	125
Update Plan and Profile Drawings	-	50	50	50
ENHANCED CUSTOMER SERVICE				
Training for Emergency CIG	-	100	100	100
Sub-Total	$ -	$ 625	$ 625	$ 625
Total of Programs Listed Above for System & Transmission Operations	$ 13,054	$ 12,841	$ 11,597	$ 24,651

	Rate Case Submission			
DESCRIPTION	2009	2010	2011	3 Year Total 2009-2011
Support Economic Growth	**$ 329,786**	**$ 306,065**	**$ 311,510**	**$ 947,361**
New Business				
- ED1 costs	157,000	143,000	142,000	$ 442,000
- Meter Installation	17,721	17,771	18,071	53,563
Sub-Total	**$ 174,721**	**$ 160,771**	**$ 160,071**	**$ 495,563**
System Reinforcement Area SS Load Relief				
White Plains to Rockview S/S	-	2,000	10,000	12,000
Sherman Creek to East 179th Street – 6 MW Transfer	500	-	-	500
Newtown	10,000	8,000	-	18,000
Astor (Herald Sq. Transfer)	3,000	-	-	3,000
Penn/Waterside	4,500	2,100	-	6,600
Hunter to East 75th St. Substation	-	1,100	14,100	15,200
Fox Hills/Fresh Kills Load Transfer Capability	1,200	-	-	1,200
Randall's Island	2,500	-	-	2,500
York Substation to Lenox Hill	1,800	10,600	5,200	17,600
City Hall to Cortlandt 25 MW	1,100	2,000	-	3,100
Sub-Total	**$ 24,600**	**$ 25,800**	**$ 29,300**	**$ 79,700**
Base Growth / Relief				
Primary Feeder Relief	43,288	43,808	44,342	131,438
Network Transformers Relief	54,700	45,620	46,158	146,478
NonNetwork Fdr Relief (Open Wire)	11,536	11,672	13,011	36,219
Overhead Transformer Relief	2,192	2,192	2,192	6,576
Sub-Total	**$ 111,716**	**$ 103,292**	**$ 105,703**	**$ 320,711**
Distribution Substation				
Distribution Substation Load Relief	6,400	6,400	6,400	19,200
Sub-Total	**$ 6,400**	**$ 6,400**	**$ 6,400**	**$ 19,200**
Meter Purchase	12,349	9,802	10,036	32,187
System and Component Performance	**$ 573,921**	**$ 565,143**	**$ 563,721**	**$ 1,702,785**
Elmsford Refurbishment	-	1,300	2,000	3,300
59th Street Bridge Crossing	-	-	2,000	2,000
Emergency Primary Cable Replacement	56,228	56,056	53,856	166,140
Overhead	14,267	14,267	14,267	42,801
Emergency Service Replacement	20,053	20,053	20,053	60,159
Street Lights	15,253	15,003	14,753	45,009
Transformer Installation	22,551	21,146	21,146	64,843
(Primary) Cable Crossings	8,000	8,000	8,000	24,000
HiPot	5,399	5,498	5,600	16,497
PILC	33,000	33,000	33,000	99,000
Transformer Remote Monitoring System	9,800	13,000	13,000	35,800
Sectionalizing Switches (SF6)	4,243	4,356	4,475	13,074
Underground Secondary Reliability Program	55,266	50,612	57,181	163,059
Secondary Open Mains	144,150	139,245	129,871	413,266
Grounding Transformers	150	180	150	480
Shunt reactors	1,376	2,761	2,788	6,925
Network Reliability	25,206	25,723	26,545	77,474
Coastal Storm Risk Mitigation	3,000	3,000	3,000	9,000
Transformer Purchase	150,118	147,106	147,140	444,364
Sub-Total	**$ 568,060**	**$ 560,306**	**$ 558,825**	**$ 1,687,191**
Distribution Substation Modernization				
Trip Coil Monitor	235	235	235	705
USS Automation	150	150	150	450
Facility Improvement Program	425	-	-	425
Tap Changer Position Indicator System	132	132	-	264
Temperature Gauges	100	100	100	300
USS Transformer Replacement	600	600	600	1,800
4kV USS Switchgear Replacement	2,200	2,200	2,200	6,600
USS Life Extension Program	1,769	1,170	1,361	4,300
Auto Reclose On Bank Breakers	250	250	250	750
Sub-Total	**$ 5,861**	**$ 4,837**	**$ 4,896**	**$ 15,594**

	Rate Case Submission			
DESCRIPTION	2009	2010	2011	3 Year Total 2009-2011
Public Safety and Environmental	**$ 18,414**	**$ 11,095**	**$ 11,095**	**$ 40,604**
Oil Minders	600	600	600	1,800
Vented Manhole Cover	10,000	-	-	10,000
Street Light Isolation Transformers	7,814	10,495	10,495	28,804
Total	**$ 18,414**	**$ 11,095**	**$ 11,095**	**$ 40,604**
Storm Hardening and Response	**$ 32,453**	**$ 31,616**	**$ 30,100**	**$ 94,169**
C Truss Program	1,746	1,763	1,780	5,289
Anderson Switch Replacement	100	100	100	300
Autoloop Reliability	7,376	7,359	7,528	22,263
Aerial (Okonite) Cable Replacement	2,521	2,532	2,544	7,597
#4,#6 Self Supporting Wire	3,165	3,169	3,175	9,509
ESCO Switch Replacement (Kyle)	2,509	2,333	2,358	7,200
33 kV Interruptible Switches	435	335	320	1,090
3 Phase Gang Switch Replacement	400	400	400	1,200
13kV Feeder Sectionalizing	97	21	24	142
Automated Emergency Ties	750	750	750	2,250
Overhead Feeder Reliability	750	750	1,125	2,625
Rear-Lot Pole Elimination	1,437	1,437	1,437	4,311
Enhanced 4kV Grid Monitoring	2,500	3,500	2,500	8,500
4kV UG Reliability	1,111	1,111	1,111	3,333
Overhead Secondary Reliability Program	500	500	500	1,500
Targeted Primary DBC Replacement	800	800	800	2,400
URD Cable Rejuvenation/Fault Indicator	806	806	198	1,810
Emergency Equipment Management System	3,000	1,500	1,000	5,500
ATS Installation USS Reliability XW	2,450	2,450	2,450	7,350
Total	**$ 32,453**	**$ 31,616**	**$ 30,100**	**$ 94,169**
Advanced Technology	**$ 39,064**	**$ 30,017**	**$ 27,267**	**$ 96,348**
Secondary Visualization Model	4,250	2,553	2,553	9,356
Secondary Monitoring (Secondary Model Validation)	4,000	4,000	6,000	14,000
Distribution Engineering Workstation	2,500	2,500	2,500	7,500
Pole Attachment Project	1,400	1,400	-	2,800
Grid Optimization	900	900	900	2,700
Integrated System Model	1,750	1,750	1,750	5,250
Decision Aids	1,500	1,500	1,500	4,500
Area Profile System	100	100	100	300
Joint Pole Use Software	450	450	-	900
Energy Efficiency IT Systems Development	2,184	1,184	1,184	4,552
High Tension Monitoring Data Acquisition System	730	730	730	2,190
Meter Shop ADAMS	1,250	-	-	1,250
Integrated Route Sheet (Work Management)	3,000	1,500	1,000	5,500
Transformer Asset Mgmt.	3,000	2,000	-	5,000
4kV Load Shedding System	450	600	450	1,500
ATS Automation	150	100	100	350
Power Quality (PQNodes) System Upgrade	1,650	1,650	-	3,300
SCADA Systems Consolidation	800	600	500	1,900
Electric Distribution Control Center Upgrades	2,500	1,500	5,000	9,000
Mapping System Upgrades	6,500	5,000	3,000	14,500
Total	**$ 39,064**	**$ 30,017**	**$ 27,267**	**$ 96,348**
Process Improvement	**$ 2,400**	**$ 13,900**	**$ 18,000**	**$ 34,300**
Work Management Systems	1,500	13,500	18,000	33,000
Accounting by Network	300	-	-	300
Commercial Service Representative Automation	600	400	-	1,000
Total	**$ 2,400**	**$ 13,900**	**$ 18,000**	**$ 34,300**
TOTAL ELECTRIC OPERATIONS	**$ 996,038**	**$ 957,836**	**$ 961,693**	**$ 2,915,567**

	2008 - 2012 Five Year Plan				
DESCRIPTION	2008	2009	2010	2011	2012
Support Economic Growth	**$ 354,433**	**$ 329,786**	**$ 306,065**	**$ 311,510**	**$ 296,185**
New Business					
- ED1 costs	137,000	157,000	143,000	142,000	142,000
- Meter Installation	19,564	17,721	17,771	18,071	18,071
Sub-Total	**$ 156,564**	**$ 174,721**	**$ 160,771**	**$ 160,071**	**$ 160,071**
System Reinforcement Area SS Load Relief					
Hell Gate Load Transfer (Bruckner 8MW)	200	-	-	-	-
White Plains to Rockview S/S	-	-	2,000	10,000	5,000
Granite Hill to Rockview	8,700	-	-	-	-
Sherman Creek to East 179th Street – 6 MW Transfer	-	500	-	-	-
Newtown	10,000	10,000	8,000	-	-
Astor (Herald Sq. Transfer)	12,000	3,000	-	-	-
Parkview (East Harlem Network)	14,000	-	-	-	-
Penn/Waterside	5,000	4,500	2,100	-	-
Hunter to East 75th St. Substation	-	-	1,100	14,100	3,700
Fox Hills/Fresh Kills Load Transfer Capability	-	1,200	-	-	-
Willowbrook	-	-	-	-	3,000
Randall's Island	6,000	2,500	-	-	-
York Substation to Lenox Hill	-	1,800	10,600	5,200	-
City Hall to Cortlandt 25 MW	-	1,100	2,000	-	-
Sub-Total	**$ 55,900**	**$ 24,600**	**$ 25,800**	**$ 29,300**	**$ 11,700**
Base Growth / Relief					
Primary Feeder Relief	43,493	43,288	43,808	44,342	44,295
Network Transformers Relief	64,306	54,700	45,620	46,158	46,460
NonNetwork Fdr Relief (Open Wire)	8,362	11,536	11,672	13,011	13,100
4kV Feeder & Wire Relief	7,249	-	-	-	-
Overhead Transformer Relief	1,042	2,192	2,192	2,192	2,192
Secondary Main Relief	1,150	-	-	-	-
Sub-Total	**$ 125,602**	**$ 111,716**	**$ 103,292**	**$ 105,703**	**$ 106,047**
Distribution Substation					
Distribution Substation Load Relief	4,400	6,400	6,400	6,400	6,400
Sub-Total	**$ 4,400**	**$ 6,400**	**$ 6,400**	**$ 6,400**	**$ 6,400**
Meter Purchase	11,967	12,349	9,802	10,036	11,967
System and Component Performance	**$ 515,370**	**$ 573,921**	**$ 565,143**	**$ 563,721**	**$ 579,905**
Elmsford Refurbishment	-	-	1,300	2,000	-
59th Street Bridge Crossing	-	-	-	2,000	5,000
Emergency Primary Cable Replacement	57,547	56,228	56,056	53,856	53,856
Overhead	15,353	14,267	14,267	14,267	14,267
Emergency Service Replacement	20,115	20,053	20,053	20,053	20,053
Street Lights	16,193	15,253	15,003	14,753	14,753
Transformer Installation	25,171	22,551	21,146	21,146	21,146
(Primary) Cable Crossings	3,135	8,000	8,000	8,000	9,000
HiPot	3,310	5,399	5,498	5,600	6,100
PILC	33,000	33,000	33,000	33,000	33,000
Transformer Remote Monitoring System	17,845	9,800	13,000	13,000	13,000
Sectionalizing Switches (SF6)	3,208	4,243	4,356	4,475	4,501
Underground Secondary Reliability Program	42,434	55,266	50,612	57,181	70,727
Secondary Open Mains	123,333	144,150	139,245	129,871	129,871
Grounding Transformers	1,226	150	180	150	150
Shunt reactors	227	1,376	2,761	2,788	2,790
Network Reliability	18,441	25,206	25,723	26,545	26,545
Coastal Storm Risk Mitigation	3,000	3,000	3,000	3,000	3,000
Transformer Purchase	125,592	150,118	147,106	147,140	147,250
Sub-Total	**$ 509,130**	**$ 568,060**	**$ 560,306**	**$ 558,825**	**$ 575,009**
Distribution Substation Modernization					
Trip Coil Monitor	235	235	235	235	235
USS Automation	150	150	150	150	150
Facility Improvement Program	725	425	-	-	-
Tap Changer Position Indicator System	250	132	132	-	-
Temperature Gauges	100	100	100	100	100
USS Transformer Replacement	600	600	600	600	600
4kV USS Switchgear Replacement	2,200	2,200	2,200	2,200	2,200
USS Life Extension Program	1,730	1,769	1,170	1,361	1,361
Auto Reclose On Bank Breakers	250	250	250	250	250
Sub-Total	**$ 6,240**	**$ 5,861**	**$ 4,837**	**$ 4,896**	**$ 4,896**

	2008 - 2012 Five Year Plan				
DESCRIPTION	2008	2009	2010	2011	2012
Public Safety and Environmental	**$ 9,200**	**$ 18,414**	**$ 11,095**	**$ 11,095**	**$ 11,095**
Oil Minders	600	600	600	600	600
Vented Manhole Cover	3,000	10,000	-	-	-
Tank Rupture Mitigation	900	-	-	-	-
Network Transformer Natural Ester (FR3) program	600	-	-	-	-
Street Light Isolation Transformers	4,100	7,814	10,495	10,495	10,495
Total	**$ 9,200**	**$ 18,414**	**$ 11,095**	**$ 11,095**	**$ 11,095**
Storm Hardening and Response	**$ 19,146**	**$ 32,453**	**$ 31,616**	**$ 30,100**	**$ 29,736**
C Truss Program	1,404	1,746	1,763	1,780	1,738
Anderson Switch Replacement	63	100	100	100	100
Autoloop Reliability	4,975	7,376	7,359	7,528	7,450
Aerial (Okonite) Cable Replacement	500	2,521	2,532	2,544	2,550
#4,#6 Self Supporting Wire	2,301	3,165	3,169	3,175	3,175
ESCO Switch Replacement (Kyle)	2,000	2,509	2,333	2,358	2,600
33 kV Interruptible Switches	-	435	335	320	320
3 Phase Gang Switch Replacement	-	400	400	400	408
4kV Feeder Sectionalizing	306	-	-	-	-
13kV Feeder Sectionalizing	-	97	21	24	24
Automated Emergency Ties	-	750	750	750	750
Overhead Feeder Reliability	1,848	750	750	1,125	1,125
Rear-Lot Pole Elimination	-	1,437	1,437	1,437	1,437
Enhanced 4kV Grid Monitoring	1,500	2,500	3,500	2,500	2,500
4kV UG Reliability	611	1,111	1,111	1,111	1,111
Overhead Secondary Reliability Program	-	500	500	500	500
Targeted Primary DBC Replacement	2,588	800	800	800	800
URD Cable Rejuvenation/Fault Indicator	-	806	806	198	198
Emergency Equipment Management System	-	3,000	1,500	1,000	500
ATS Installation USS Reliability XW	1,050	2,450	2,450	2,450	2,450
Total	**$ 19,146**	**$ 32,453**	**$ 31,616**	**$ 30,100**	**$ 29,736**
Advanced Technology	**$ 21,425**	**$ 39,064**	**$ 30,017**	**$ 27,267**	**$ 14,774**
Distribution Simulator	-	-	-	-	2,000
Secondary Visualization Model	2,900	4,250	2,553	2,553	1,160
Secondary Monitoring (Secondary Model Validation)	2,000	4,000	4,000	6,000	6,000
System Trouble Analysis and Response (STAR)	1,000	-	-	-	-
Distribution Engineering Workstation	-	2,500	2,500	2,500	2,500
Pole Attachment Project	1,050	1,400	1,400	-	-
Grid Optimization	900	900	900	900	-
Integrated System Model	1,750	1,750	1,750	1,750	-
Decision Aids	2,225	1,500	1,500	1,500	-
Area Profile System	100	100	100	100	100
Joint Pole Use Software	450	450	450	-	-
Heads Up Display	1,000	-	-	-	-
Energy Efficiency IT Systems Development	-	2,184	1,184	1,184	784
High Tension Monitoring Data Acquisition System	500	730	730	730	730
Meter Shop ADAMS	750	1,250	-	-	-
Integrated Route Sheet (Work Management)	500	3,000	1,500	1,000	-
Transformer Asset Mgmt.	750	3,000	2,000	-	-
4kV Load Shedding System	150	450	600	450	-
ATS Automation	-	150	100	100	-
Power Quality (PQNodes) System Upgrade	1,150	1,650	1,650	-	-
SCADA Systems Consolidation	1,250	800	600	500	-
Electric Distribution Control Center Upgrades	2,000	2,500	1,500	5,000	-
Mapping System Upgrades	1,000	6,500	5,000	3,000	1,500
Total	**$ 21,425**	**$ 39,064**	**$ 30,017**	**$ 27,267**	**$ 14,774**
Process Improvement	**$ 3,319**	**$ 2,400**	**$ 13,900**	**$ 18,000**	**$ 32,280**
Work Management Systems	-	1,500	13,500	18,000	32,280
Accounting by Network	1,000	300	-	-	-
Commercial Service Representative Automation	600	600	400	-	-
Electric Mobile Dispatch & Extend to Construction	1,200	-	-	-	-
Wireless Support for Electric Operations	519	-	-	-	-
Total	**$ 3,319**	**$ 2,400**	**$ 13,900**	**$ 18,000**	**$ 32,280**
TOTAL ELECTRIC OPERATIONS	**$ 922,893**	**$ 996,038**	**$ 957,836**	**$ 961,693**	**$ 963,975**

Consolidated Edison Company of New York, Inc.
Electric Operations O & M Programs

Title	Rate Case Submission				
	Forecast RYE 2009	Forecast RYE 2010	Forecast RYE 2011	Forecast RYE 2012	Forecast RYE 2013
Support Economic Growth	**$1,111**	**$3,105**	**$4,025**	**$5,129**	**$5,129**
Customer Focused Service Ruling Program	$244	$226	$226	$226	$226
SMART Electric Technologies - new program	$592	$592	$592	$592	$592
500 MW DSM Monitoring & Verification	$0	$292	$384	$476	$476
500 MW DSM Market Research Support	$0	$400	$400	$400	$400
500 MW DSM Program Administration	$0	$920	$1,748	$2,760	$2,760
500 MW DSM Training	$0	$200	$200	$200	$200
500 MW DSM Website Development	$0	$200	$200	$200	$200
Commerical Service Representative Automation	$275	$275	$275	$275	$275
System and Component Performance	**$3,225**	**$13,106**	**$13,706**	**$13,466**	**13,466**
Unit Substation repairs and inspection	$2,325	$1,097	$1,097	$1,097	$1,097
Automatic Transfer Switch Operator Replacement	$900	$900	$900	$160	$160
RMS Response Group	$0	$1,820	$1,820	$1,820	$1,820
Electrical Engineering Support - Man	$0	$4,740	$4,840	$4,840	$4,840
O&M Vault Repairs - Man	$0	$4,549	$5,049	$5,549	$5,549
Public Safety and Environmental	**$71,867**	**$72,700**	**$74,393**	**$75,587**	**$75,587**
Dissolved Gas in Oil Analysis (DGOA)	$3,725	$3,941	$3,966	$3,990	$3,990
5 Year OH Inspection Program	$1,089	$3,226	$3,351	$3,481	$3,481
5-Year UG Structure Inspection Program	$35,001	$23,829	$23,691	$23,691	$23,691
Annual Stray Voltage Testing Program	$12,500	$8,892	$8,892	$8,892	$8,892
Electric Distribution Inspection System (EDIS) Improvements	$30	$200	$200	$200	$200
Mobile Stray Voltage Testing - Sarnoff devices	$14,850	$21,074	$22,009	$23,022	$23,022
Network Transformer vault cleaning program	$4,357	$6,951	$7,697	$7,724	$7,724
Central Quality Assurance	$315	$4,587	$4,587	$4,587	$4,587

Consolidated Edison Company of New York, Inc.
Electric Operations O & M Programs

Title	Forecast RYE 2009	Forecast RYE 2010	Forecast RYE 2011	Forecast RYE 2012	Forecast RYE 2013
Storm Hardening and Response	$18,434	$21,052	$21,052	$21,052	$21,052
Customer Response Program	$418	$388	$388	$388	$388
Danger Tree Removal	$632	$634	$634	$634	$634
3-Phase Gang Switch Inspection and Repair program	$101	$349	$349	$349	$349
Line Clearance Program	$13,755	$15,433	$15,433	$15,433	$15,433
Overhead Planning Group	$131	$163	$163	$163	$163
Double Wood program	$1,000	$2,648	$2,648	$2,648	$2,648
Rear Lot Pole Elimination	$2,397	$1,437	$1,437	$1,437	$1,437
Process Improvement	$11,364	$14,086	$16,196	$18,332	$18,332
Area System Profile Program	$100	$100	$100	$100	$100
Technical Support/NYC Regulatory Liaison Program	$376	$220	$220	$220	$220
Field Auditing & Quality Control Program	$563	$394	$394	$394	$394
NAICS Code Append	$50	$12	$12	$38	$38
Establishment of a Regional Contractor Oversight / Review Group	$126	$237	$237	$237	$237
Electric Operations Process Management - EOPM	$800	$800	$800	$800	$800
Engineering Contractor -Vendor Layouts	$497	$497	$497	$497	$497
Enhanced Project Planning	$7,834	$9,358	$9,358	$9,358	$9,358
Electric Distribution Equipment Reconditioning & Repairs	$1,018	$1,018	$1,018	$1,018	$1,018
Accounting By Network	$0	$350	$350	$350	$350
Mapping System Upgrade - IT	$0	$0	$2,000	$4,000	$4,000
COOP's	$0	$350	$350	$350	$350
Senior Civil Engineers	$0	$100	$100	$100	$100
Staffing Additions - DE	$0	$110	$220	$330	$330
Programming resources for Electric Operations Applications – FIN Team	$0	$540	$540	$540	$540
Total of Programs Listed Above for Electric Operations O&M	$106,001	$124,049	$129,372	$133,566	$133,566

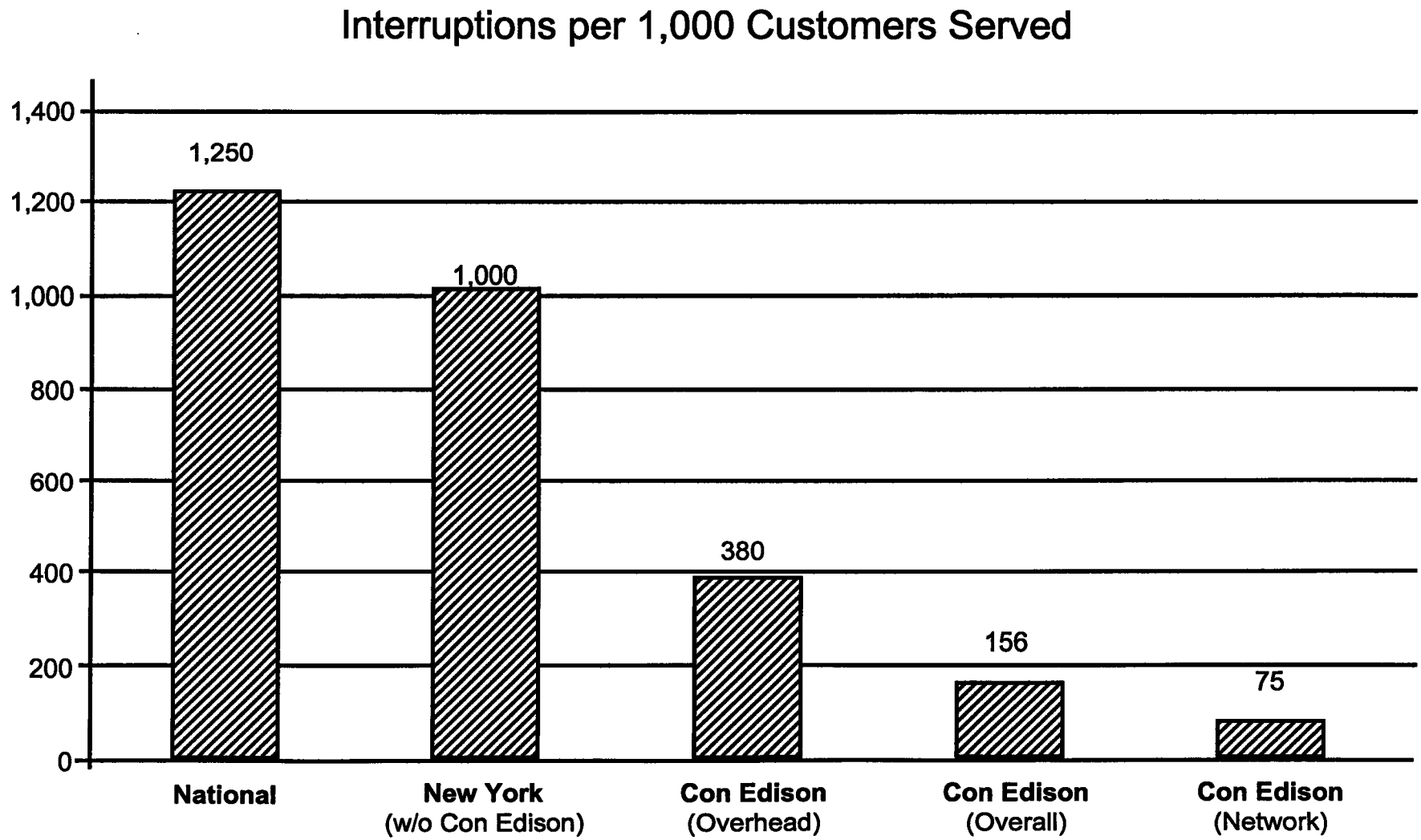
Consolidated Edison Company of New York, Inc.
Electric Operations O & M Programs

Title	$000s			
	2007 History - RYE 2010			
	2007 Historical Spending for rate case requests	Requested Amount Approved in 2008 Rate Case	Program Change 2010	Forecast RYE 2010
Support Economic Growth	$450	$1,111	$2,655	$3,105
Customer Focused Service Ruling Program	$0	$244	$226	$226
SMART Electric Technologies - new program	$0	$592	$592	$592
500 MW DSM Monitoring & Verification	$0	new	$292	$292
500 MW DSM Market Research Support	$450	new	($50)	$400
500 MW DSM Program Administration	$0	new	$920	$920
500 MW DSM Training	$0	new	$200	$200
500 MW DSM Website Development	$0	new	$200	$200
Commerical Service Representative Automation	$0	$275	$275	$275
System and Component Performance	$5,435	$5,225	$7,671	$13,106
Unit Substation repairs and inspection	$0	$2,325	$1,097	$1,097
Automatic Transfer Switch Operator Replacement	$0	$900	$900	$900
RMS Response Group	$0	new	$1,820	$1,820
Electrical Engineering Support - Man	$2,844	new	$1,896	$4,740
O&M Vault Repairs - Man	$2,591	new	$1,958	$4,549
Public Safety and Environmental	$35,072	$71,867	$37,629	$72,700
Dissolved Gas in Oil Analysis (DGOA)	$3,745	$3,725	$196	$3,941
5 Year OH Inspection Program	$0	$1,089	$3,226	$3,226
5-Year UG Structure Inspection Program	$12,347	$35,001	$11,482	$23,829
Annual Stray Voltage Testing Program	$7,354	$12,500	$1,538	$8,892
Electric Distribution Inspection System (EDIS) Improvements	$0	$30	$200	$200
Mobile Stray Voltage Testing - Sarnoff devices	$11,321	$14,850	$9,754	$21,074
Network Transformer vault cleaning program	$115	$4,357	$6,836	$6,951
Central Quality Assurance	$190	$315	$4,397	$4,587

Consolidated Edison Company of New York, Inc.
Electric Operations O & M Programs

Title	$000s			
	2007 History - RYE 2010			
	2007 Historical Spending for rate case requests	Requested Amount Approved in 2008 Rate Case	Program Change 2010	Forecast RYE 2010
Storm Hardening and Response	$15,715	$18,434	$5,337	$21,052
Customer Response Program	$0	$418	$388	$388
Danger Tree Removal	$0	$632	$634	$634
3-Phase Gang Switch Inspection and Repair program	$78	$101	$271	$349
Line Clearance Program	$13,529	$13,755	$1,904	$15,433
Overhead Planning Group	$0	$131	$163	$163
Double Wood program	$2,108	$1,000	$540	$2,648
Rear Lot Pole Elimination	$0	$2,397	$1,437	$1,437
Process Improvement	$9,131	$11,364	$4,955	$14,086
Area System Profile Program	$0	$100	$100	$100
Technical Support/NYC Regulatory Liaison Program	$150	$376	$70	$220
Field Auditing & Quality Control Program	$150	$563	$244	$394
NAICS Code Append	$40	$50	($28)	$12
Establishment of a Regional Contractor Oversight / Review Group	$0	$126	$237	$237
Electric Operations Process Management - EOPM	$0	$800	$800	$800
Engineering Contractor -Vendor Layouts	$276	$497	$221	$497
Enhanced Project Planning	$7,822	$7,834	$1,536	$9,358
Electric Distribution Equipment Reconditioning & Repairs	$693	$1,018	$325	$1,018
Accounting By Network	$0	new	$350	$350
Mapping System Upgrade - IT	$0	new	$0	$0
COOP's	$0	new	$350	$350
Senior Civil Engineers	$0	new	$100	$100
Staffing Additions - DE	$0	new	$110	$110
Programming resources for Electric Operations Applications -- FIN Team	$0	new	$540	$540
Total of Programs Listed Above for Electric Operations O&M	$65,803	$106,001	$58,247	$124,049

Customer Interruption Rate



CONSOLIDATED EDISON COMPANY OF NEW YORK, INC.
SYSTEM AND TRANSMISSION OPERATIONS CAPITAL PROJECTS
SYSTEM OPERATION CAPITAL PROGRAMS

	($000s)			
	Rate Case Submission			
DESCRIPTION	2009	2010	2011	3 Year Total
ADVANCED TECHNOLOGY	$ 10,150	$ 8,700	$ 2,750	$ 21,600
Energy Management Systems	2,000	-	-	2,000
Work Management Systems	3,250	3,250	300	6,800
EMS Continuance	-	500	1,000	1,500
Operation Requirements (On-Line Systems)	3,400	2,650	500	6,550
District Operations Improvement	1,000	1,800	950	3,750
Bulk Power Improvements	500	500	-	1,000
Sub-Total	$ 10,150	$ 8,700	$ 2,750	$ 21,600
				-
OTHER	$ 6,650	$ 1,050	$ 500	$ 8,200
Facilities / Utilities Improvements	6,650	1,050	500	8,200
	$ 6,650	$ 1,050	$ 500	$ 8,200
				0
TOTAL SYSTEM OPERATION	$ 16,800	$ 9,750	$ 3,250	$ 29,800

CONSOLIDATED EDISON COMPANY OF NEW YORK, INC.
SYSTEM AND TRANSMISSION OPERATIONS CAPITAL PROJECTS
SYSTEM OPERATION CAPITAL PROGRAMS

	($000s)				
	2008 - 2012 Five Year Plan				
DESCRIPTION	2008	2009	2010	2011	2012
ADVANCED TECHNOLOGY	$ 11,800	$ 10,150	$ 8,700	$ 2,750	$ 2,650
Energy Management Systems	8,200	2,000	-	-	-
Work Management Systems	700	3,250	3,250	300	350
EMS Continuance	-	-	500	1,000	500
Operation Requirements (On-Line Systems)	2,000	3,400	2,650	500	800
District Operations Improvement	900	1,000	1,800	950	1,000
Bulk Power Improvements	-	500	500	-	-
Sub-Total	$ 11,800	$ 10,150	$ 8,700	$ 2,750	$ 2,650
OTHER	$ 3,100	$ 6,650	$ 1,050	$ 500	$ 1,500
Facilities / Utilities Improvements	3,100	6,650	1,050	500	1,500
	$ 3,100	$ 6,650	$ 1,050	$ 500	$ 1,500
TOTAL SYSTEM OPERATION	$ 14,900	$ 16,800	$ 9,750	$ 3,250	$ 4,150

CONSOLIDATED EDISON COMPANY OF NEW YORK, INC.
CAPITAL AND O&M
SUPPORT ECONOMIC GROWTH
SUBSTATION OPERATIONS

DESCRIPTION	Page #
Reference Substation Operations - Capital - IIP- 2	
Astor-Establish New Area Substation	2
York-Establish New Area Substation	3
Transformer Cooling Program	4
Woodrow-Install Third Transformer And Fresh Kills Expand 138kV Station	5
Newtown-Establish Station	6
Westside-Establish New Transmission Station	7
Land Acquisition For Future New Substations	8
Emergent Load Relief Program	9
Hudson Yards-Establish New Substation	10
Gateway-Establish New Area Substation	11
Corona-Install Transformer No. 10	12
Corona-Replace Transformer No. 7	13
Millwood West-Replace Limiting 13kV Bus	14
Parkchester-Install 4th Transformer	15
Parkchester-Install 3rd Cap Bank	16
Generation Interconnection	
Astoria East-Install Phase Angle Regulator	17
Corona-Install Series Reactor	17
Reference Substation Operations O&M - IIP- 3	
Substation Operations Staffing - New Facilities	18

Substation Operations – 2009 Capital

Project/Program Title	Astor – New Area Substation
Status	Construction
Estimated Service Date	2009

Work Description:
This project involves the construction of a five bank Area substation on the west side of Manhattan. Establishing a new standard double syn bus area station with 5- 65 MVA transformers and 60 MVAR of capacitors on the west side of Manhattan. The substation will be supplied by tapping the existing 138 kV feeders (38M71 to 38M75) currently supplying the West 65th Street substations from the West 49th Street switching station.

Transfer the Herald Square network, currently supplied from the West 42nd Street #1 Substation, to the new Astor area substation prior to the summer of 2009.

Justification:
The West 42nd Street #2 substation supplies the Columbus Circle and the Herald Square networks in the borough of Manhattan. The anticipated demand will exceed the substation design capability of 267 MW in the summer of 2009. Since both substations are already fully developed as a five-bank station, it is necessary to transfer load from the substations. All nearby substations are at or close to capacity and the only alternative is the transfer load to a new substation. The new substation will be sited on the west side of Manhattan and it will be named the Astor area station. The substation will also provide for the future load relief of the West 65th St. No.2 area station, whose relief has been delayed as a result of Demand Side Management (DSM).

Estimated Completion Date:
The schedule service date for this project is May 2009.

Status:
Construction is in progress.

Funding ($000):

Forecast 2009	Forecast 2010	Forecast 2011	Forecast 2012	Forecast Total
6,000	-	-	-	6,000

Substation Operations – 2009 Capital

Project /Program Title	York – Establish New Area Substation
Status	Design and Engineering
Estimated Service Date	2011

Work Description:
Establish a new 138/13 kV area substation in the North midtown Manhattan area. The substation will be initially established with three (3) 138/13KV 65 MVA transformers and associated switchgear sections with distribution feeders, and 20 MVAR capacitors. The substation will be supplied from 138kV feeders which will emanate from Parkview Area Substation which is (in-turn) supplied from Mott Haven Switching Station. The new substation will include a "3G" design which would share two existing transformers at East 75th Street Substation via 13 kV connections to the York bus. The "3G" design results in the deferral of the 4th transformer and associated cable from 2010 to 2028 and the elimination of the 5th transformer and the 5th transmission line, as compared to the conventional design.

Justification:
The continuing demand growth on both the East 63rd Street No.1 and East 75th Street Area Substations dictate the need for a new area substation in the North midtown Manhattan area. In 2010 after York Substation has been established, part of Lenox Hill network (154 MW) will be transferred from East 75th Street to York to form the new Cornell Network, thereby achieving the required load relief for East 75th Street Substation. Thereafter, load relief for East 63rd St. No. 1 Area Substation will be possible by transferring the Hunter network (88 MW) to 75th Street

Estimated Completion Date
The schedule completion date for the substation is 2011.

Status:
Design/Engineering in progress. Demolition to clear the area within the steam plant to house the substation and some relocation work has begun.

Funding ($000):

Forecast 2009	Forecast 2010	Forecast 2011	Forecast 2012	Forecast Total 2009-2012
97,000	34,000	4,000	-	135,000

Revised Funding ($000):

Forecast 2009	Forecast 2010	Forecast 2011	Forecast 2012	Rate Case Forecast Total
137,000	106,000	4,000	-	247,000

Substation Operations – 2009 Capital

Project/Program Title	Substation Transformer Cooling
Status	On-going
Estimated Service Date	Various

Work Description:
Install external cooling (water spray and/or fans) and/or upgrade secondary cable to area station transformers for the purpose of obtaining additional transformer capacity, thus allowing deferral of more expensive load relief measures (transformer additions, load transformers, etc.) This project will be implemented at the following stations: West 65th St., Plymouth, and Fox Hills.

Justification:
More cost effective manner of achieving demand relief

Estimated Completion Date:
Various..

Status:
On-going.

Funding ($000)

Forecast 2009	Forecast 2010	Forecast 2011	Forecast 2012	Forecast Total 2009-2012
1,000	-	1000	1000	3,000

Substation Operations – 2009 Capital

Project /Program Title	Woodrow Substation - Install Third Transformer and 138kV Feeder
Status	Engineering/Construction
Estimated Service Date	March 2010

Work Description:
Install a 3rd transformer, a 138 kV supply feeder from the Fresh Kills substation, and 8-13 kV feeder positions to the Woodrow substation. This expansion will increase the substation capability from 104 MW to 203 MW. In addition, this project will include the construction of a new control room at the Fresh Kills Substation.

Justification
Based on the 2005-2014 Area Substation and Subtransmission Load Relief Program, the Woodrow substation rated capability of 104 MW will be exceeded in 2008. As a result of Demand Side Management (DSM) initiatives, the service date has been deferred to 2010. To meet this expected increase in load as well as future load growth in the area, a third transformer and a 138 kV supply feeder will be installed by March 2010. While the substation was originally established with two transformers, its design and layout will accommodate a five transformer area station.

Estimated Completion Date
The project is scheduled to be completed by March 2010.

Status
The transformer and switchgear is in place at the Woodrow substation. The Fresh Kills control room is under construction, and we are waiting final NEPA filing before commencing with the 138 kV feeder work.

Funding ($000):

Forecast 2009	Forecast 2010	Forecast 2011	Forecast 2012	Forecast Total 2009-2012
22,000	6,000	-	-	28,000

Substation Operations – 2009 Capital

Project/Program Title	Newtown - New Substation
Status	Engineering/Construction
Estimated Service Date	2011

Work Description:
Establish a new Area Substation in the Long Island City part of Queens will be designed for up to five 138/27KV 93.3 MVA transformers, five complete switchgear sections supplying the 27KV distribution system, and 60 MVAR of capacitors. The substation will be supplied by tapping the existing Vernon to Glendale 138 kV feeders. Initially the substation will be established with three transformers and 60 MVAR of capacitors.

Justification:
Based on the current 2007 – 2016 Area Substation and Subtransmission Feeder Ten-Year Load Relief Program load projections, North Queens area station will require load relief in 2013. The station cannot be expanded and load relief must be obtained through load transfers. To further improve the reliability of the Queens Load area, efforts are being made to advance the substation's service date to 2010.

Estimated Completion Date:
The substation is scheduled to be operational in 2011.

Status:
Engineering/Design is on-going. Excavation is in progress.

Budgeted Funding ($000)

Forecast 2009	Forecast 2010	Forecast 2011	Forecast 2012	Forecast Total
72,000	45,000	4,000	-	121,000

Revised Funding ($000)

Forecast 2009	Forecast 2010	Forecast 2011	Forecast 2012	Forecast Total
72,000	56,000	4,000	-	132,000

Based on final estimate of 1/08.

Substation Operations – 2009 Capital

Project/Program Title	West Side 345kV Transmission Switching Station
Status	Engineering Concepts and Land Acquisition in Progress
Estimated Service Date	Land Acquisition - 2011/2012 Substation - 2016

Work Description:
The proposed West Side Transmission Substation will provide 138kV transmission capacity to the Hudson Yards Area Substation, as well as five other future area substations. The 345kV bus will have provisions for future feeder bus sections.

Justification:
In order to facilitate long-term planning and design of the West Side Switching Substation, suitable sites are needed to be identified and acquired well in advance of the planned start of construction. This requires adequate funding to allow for timely purchase, environmental testing, and preparation of the West Side Switching Substation site. In order to provide the 138kV subtransmission feeders for the proposed area substation, it is necessary to construct a new 345/138kV switching station.

Estimated Completion Date:
Property projected to be purchased in 2011/2012 time frame. The switching station service date is projected for 2016.

Status:
Planning.

Funding ($000):

Forecast 2009	Forecast 2010	Forecast 2011	Forecast 2012	Forecast Total 2009- 2012
-	-	100,000	100,000	200,000

Substation Operations – 2009 Capital

Project/Program Title	New Land Acquisition for Future Substations
Status	Planning and Engineering
Estimated Service Date	Various

Work Description:
To provide funding of land purchases for future Manhattan substations.

Justification:
In order to facilitate the long-term planning and design of new substations, suitable sites need to be identified and acquired at least two years in advance of the planned start of construction. This requires adequate funding to allow for timely purchase, environmental testing, and preparation of these future substation sites.

Estimated Completion Date:
The estimated completion date is 2012 for the property acquisition of two Manhattan Area Substation sites.

Status:
Real Estate Team will continue to monitor property availability in the area, but will not be actively searching for properties.

Funding ($000):

Forecast 2009	Forecast 2010	Forecast 2011	Forecast 2012	Forecast Total 2009-2012
45,000	55,000	47,500	22,500	170,000

Revised Funding ($000):

Forecast 2009	Forecast 2010	Forecast 2011	Forecast 2012	Forecast Total 2009-2012
-	-	-	5,000	5,000

Property acquisition has been delayed by the implementation of DSM programs.

Substation Operations – 2009 Capital

Project/Program Title	Emergent Load Relief Program
Status	On-going
Estimated Service Date	On-going

Work Description:
Unplanned load relief work and/or unplanned reliability work as a result of post summer load analysis and/or reliability analysis.

Justification:
As a result of post-summer analysis, load relief measures and/or reliability work may be required to meet the forecasted demand for the following summer. Since these projects are a result of post summer experience, they are not included in the prior year's funding. Several of the Manhattan substations will require additional 13 kV feeder positions.

Estimated Completion Date:
On-going.

Status
On-going.

Funding ($000):

Forecast 2009	Forecast 2010	Forecast 2011	Forecast 2012	Forecast Total 2009-2012
3,000	3,000	3,000	3,000	12,000

Substation Operations – 2009 Capital

Project/Program Title	Hudson Yards – New Substation Site Acquisition
Status	Planning
Estimated Service Date	2010

Work Description:
To provide funding of land purchase for the Hudson Yards new Area Substation. Currently, a number of properties are under evaluation for this new area substation.

Justification:
In order to facilitate the long-term planning and design of Hudson Yards, suitable sites need to be identified and acquired several years in advance of the planned start of construction. This requires adequate funding to allow for timely purchase, environmental testing, and preparation of these future substation sites.

Estimated Completion Date:
The estimated completion date is 2010 for the property acquisition.

Status:
In the process of reviewing viable properties for the Hudson Yards new Area Station in Manhattan.

Funding ($000)

Forecast 2009	Forecast 2010	Forecast 2011	Forecast 2012	Forecast Total 2009-2012
30,000	30,000	-	-	60,000

Substation Operations – 2009 Capital

Project/Program Title	Gateway - New Substation (Land Acquisition)
Status	Planning
Estimated Service Date	Land Purchase 2009, Station Service Date 2017

Work Description:
Based on the current 2008 – 2016 Area Substation and Subtransmission Feeder Ten-Year Load Relief Program load projections, Bensonhurst No.2 area station will require load relief in 2017. The station cannot be expanded and load relief must be obtained through load transfers. Establishment of a new area substation in the borough of Brooklyn relieves Bensonhurst No.2 by providing for load transfer. The new substation is planned to initially have transformers that will accommodate the transfer of approximately 180 MW from Bensonhurst No.2 to establish the new Canarsie Network.

Justification:
In order to facilitate long-term planning and design of Gateway Substation, suitable sites are needed to be identified and acquired at least two years in advance of the planned start of construction. This requires adequate funding to allow for timely purchase, environmental testing, and preparation of the new Substation site.

Estimated Completion Date:
The Company is currently negotiating for a potential site with expectations to purchase it in 2009. The Station service is 2017.

Status:
This project is in the planning stage.

Funding ($000)

Forecast 2009	Forecast 2010	Forecast 2011	Forecast 2012	Total Forecast 2009-2012
7,000	-	-	-	7,000

Substation Operations – 2009 Capital

Project/Program Title	Corona 27 kV – Bank 10 Installation
Status	Planning
Estimated Service Date	2010

Work Description:
Install a new 138 kV Breaker No. 3S and Transformer No. 10 (to be connected to Corona No. 1) and supplied from the bus section between Breakers 2S and 3S, to solve the two 138 kV breaker failure scenarios at Corona and provide independent first contingency design for Corona No. 1 and Corona No. 2 area substations.

Justification:
The failure of 138 kV Breaker No. 8N at the Corona 138 kV station will result in a simultaneous loss of Transformer No. 4 at Corona No. 1 substation and Transformer No. 6 at Corona No. 2 substation. Also, the failure of 138 kV Bus Tie Breaker BT will result in the simultaneous loss of Transformer No. 1 at Corona No. 1 and Transformer No. 6 at Corona No. 2, as shown on the attached diagram. Due to load consideration, the stand-by bank No.5 will be switched to Corona No.2 , and operate Corona No. 1 based on three hour rating of the 3 transformers of 399 MW.

The 399 MW capability assumes that, following a breaker failure, the faulted equipment will be identified and one of the two transformers will be restored to service within 3 hours. The 3-hour capability of Corona No. 1 substation will begin to be exceeded by 11 MW (3% overload) in 2008 and will increase to 55 MW (14% overload by 2016). The installation of transformer No.10 will increases the Corona No.1 capability to 503 MW.

Estimated Completion Date:
The projected completion date for this project is 2010.

Status:
Planning stage

Funding ($000)

Forecast 2009	Forecast 2010	Forecast 2011	Forecast 2012	Forecast Total 2009-2012
7,000	10,000			17,000

Revised Funding ($000):

Forecast 2009	Forecast 2010	Forecast 2011	Forecast 2012	Forecast Total 2009-2012
10,000	13,000	-	-	23,000

Revised funding based on preliminary scope of work.

Substation Operations – 2009 Capital

Project/Program Title	Corona 27 kV – Bank 7 Replacement
Status	Planning
Estimated Service Date	2012

Work Description:
Replace the existing transformer No.7 at Corona No.2 with a higher rated transformer.

Justification:
The Corona No.2 substation supplies the Rego Park and Jackson Height networks in the borough of Queens. The load projections for the two networks will exceed the substation capability (454 MW) in the summer of 2012. The current design capability of 454 MW is limited by the 116 MVA rating of transformer No.7. Replacing the transformer with a 132 MVA bank, which will match the other four banks installed at the substation, will increase the substation design capability to 504 MW and provide for the future load growth for both networks.

Estimated Completion Date:
The projected completion date for this project is May 2012.

Status:
Planning stage

Funding ($000)

Forecast 2009	Forecast 2010	Forecast 2011	Forecast 2012	Forecast Total 2009-2012
-	-	5,000	5,000	10,000

Substation Operations – 2009 Capital

Project/Program Title	Millwood West – 13 kV bus upgrade
Status	Planning
Estimated Service Date	2011

Work Description:
Upgrade the 13 kV transformer bus at Millwood 13 kV substation.

Justification:
Currently the bus for transformers No.1 and No.2 limit the substation design capability to 81 MW, which is exceeded by the load demand from the area supplied by the substation. The upgrade of the transformers bus will increase the substation capability to 89 MW, which will provide for the next several years of load growth.

Estimated Completion Date:
This projected completion date for this project is May 2011.

Status:
Planning stage

Funding ($000)

Forecast 2009	Forecast 2010	Forecast 2011	Forecast 2012	Forecast Total 2009-2012
-	1,000	1,000	-	2,000

Substation Operations – 2009 Capital

Project/Program Title	Parkchester No.2 – Install 4th Transformer & Switchgear
Status	Planning
Estimated Service Date	2011

Work Description:
Install the 4th transformer 138/13 kV and associated sections (2) of 13 kV switchgear.

Justification:
The Parkchester No.2 area substation is currently equipped with three 138/13 kV transformers and 40 MVAR of capacitor banks, resulting in a design capability of 163 MW. An additional 20 MVAR of capacitor will be installed prior to the summer of 2010 increasing the capability to 166 MW. The load growth for the load areas supplied from the substation, the Northeast Bronx network and Radial load, is forecasted to exceed the capability by the summer of 2011. The installation of 4th transformer and associated switchgear section will increase the substation capability to 244 MW and provide for the future load growth in the area.

Estimated Completion Date:
The projected completion date for this project is May 2011.

Status:
Planning stage.

Funding ($000)

Forecast 2009	Forecast 2010	Forecast 2011	Forecast 2012	Forecast Total 2009-2012
-	5,000	5,000	-	10,000

Revised Funding ($000)

Forecast 2009	Forecast 2010	Forecast 2011	Forecast 2012	Forecast Total 2009-2012
3,000	12,000	5,000	-	20,000

Based on preliminary scope of work.

Substation Operations – 2009 Capital

Project/Program Title	Parkchester No.2 – Install 3rd Cap. Bank
Status	Planning
Estimated Service Date	2010

Work Description:
Install 20 MVAR of capacitors banks (2-10 MVAR banks), and interconnect them to the substation 13 kV load bus via a 13 kV circuit breaker.

Justification:
The Parkchester No.2 area substation is currently equipped with three 138/13 kV transformers and 40 MVAR of capacitor banks, resulting in a design capability of 163 MW. The load growth for the load areas supplied from the substation, the Northeast Bronx network and Radial load, is forecasted to exceed the capability by the summer of 2010. The installation of 20 MVAR of capacitors will increase the substation capability to 166 MW as well as provide voltage support for both the substation as well as the transmission system.

Estimated Completion Date:
The projected completion date for this project is May 2010.

Status:
Planning stage.

Funding ($000)

Forecast 2009	Forecast 2010	Forecast 2011	Forecast 2012	Forecast Total 2009-2012
1,000	1,000	-	-	2,000

Substation Operations – 2009 Capital

Project/Program Title	Generation Interconnection: Astoria (PAR) & Corona (reactor)
Status	On Hold
Estimated Service Date	Based on Next Developer to Interconnect at Astoria.

Work Description:
In order to allow the connection and operation of additional generating resources within New York City, circuit breakers have been replaced and current limiting equipment are being installed at various locations in order to ensure the safe and reliable operation of the bulk power system. As part of the NYISO *Fault Current Mitigation Plan* for Class Year 2001 developers, a bus tie series reactor at the Corona 138-kV Substation and a bus tie phase angle regulator at the Astoria East Substation were identified as needed to mitigate incremental fault currents caused by Class Year 2001 developers.

Justification:
These facilities will allow the operation of the second 500 MW SCS generating unit planned to be installed and connected to the Astoria East Substation without causing any overduty problems on circuit breakers.

Estimated Completion Date:
Based on SCS's commitment to install the second phase of their project.

Status:
On hold

Funding ($000)

Forecast 2009	Forecast 2010	Forecast 2011	Forecast 2012	Forecast Total 2009 - 2012
25,000	35,000	4,000	-	64,000

Substation Operations - 2009 Operations & Maintenance (O&M)

Project/Program Title	SSO Staffing - New Facilities
Status	On-going
Estimated Service Date	Various 2007-2012 (on going)

Work Description:
Incremental resource additions for the operation, maintenance and testing of newly constructed and commissioned substations is required. These stations include Mott Haven, Parkview, Rockview, Astor, Academy, York, and Newtown. Incremental staffing required for the new stations is estimated to be 37 (Operators, Mechanics, Protective System Technicians, Field Supervisors, Environmental, Health and Safety Supervisor), & 14 EOT's (2 per station).This also includes operating supplies & expenses for $150k per facility on an annual basis.

Substation Operations has a large geographical footprint and will be commissioning several new critical facilities on the system. The addition of one (1) Environmental Health and Safety Specialist will be required to allow the department to take a more proactive approach with emerging and potential EH&S issues.

In addition, the number of new transformers being installed in new and existing stations will require additional resources to meet our anticipated scheduled and non-scheduled workload and to ensure our continued high level of system reliability.

The allocation of new operators would be as follows (17):

Mott Haven	4
Rockview	2
Academy	1
Parkview	3
Astor	2
York	2
Newtown	2
ASM Group	1

The allocation of new mechanics would be as follows (12):

Mott Haven	1
Rockview	1
Academy	1
Astor	1
Parkview	2
York	1
Newtown	1
Transformer Group	4

The allocation of new protective system technicians would be as follows (2):

North	1
Manhattan	1

Substation Operations - 2009 Operations & Maintenance (O&M)

The allocation of new management is as follows (6):

Mott Haven	0	York	1
Rockview	1	Transformer Group	1
Academy	0	EH&S -Environmental,	
Parkview	1	Health and Safety	1
Astor	0	Newtown	1

Justification:
Additional staffing is required to operate and maintain newly constructed and commissioned facilities.

Estimated Completion Date:
Various service dates – 2007 to 2012 (on-going)

Status:
On-going

Funding ($000)

Historical Year 2007	Forecast RYE 2010	Forecast RYE 2011	Forecast RYE 2012	Forecast Total
315	5,212	5,870	6,400	17,482

CONSOLIDATED EDISON COMPANY OF NEW YORK, INC.
CAPITAL AND O&M
SUPPORT ECONOMIC GROWTH
SYSTEM & TRANSMISSION OPERATIONS

DESCRIPTION	Page #
Reference Transmission Operations Capital - IIP- 4	
Vernon - W49th St-38M72 Upgrade	2
Dynamic Feeder Rating	4
Reference System & Transmission Operations O&M - IIP-5	
Sequencing And Scheduling - Add 3rd District Operator (DO)	5

Transmission Operations – 2009 Capital

Project/Program Title	Vernon - W49th Street - 38M72 Upgrade
Status	Planning
Estimated Service Date	May 2010

Work Description:
The objective of this project is to install a phase angle regulator on Feeder 38M72, between the Vernon 138-kV Switching Station and the West 49th Street Switching Station to enable the transfer of up to 156 MW (existing rating of Feeder 38M72) between the two stations.

Justification:
For the summer of 2008, the load pocket consisting of W49th Street, East 13th Street, and East River is anticipated to supply about 2740 MW. The load pocket does not meet current transmission planning criteria for the second contingency loss of Feeders M51 and M52, which results in the loading of Feeders 45 and 46 above normal ratings. To mitigate the overloads, the capability of Feeder 38M72 can be utilized in support of the load pocket, but this will require the installation of a phase angle regulator upon the retirement of the Poletti generator, scheduled for the spring of 2010.

It has also been determined that this tie, when energized, would create the potential for short-circuit currents that exceed the capability of the switchgear at the Vernon Substation. While a phase angle regulator with non-standard impedance would address the short circuit issue, its unique qualities would require the company to maintain a similar spare unit. Preferably, a conventional phase angle regulator could be used, without the need for a spare, so long as the switchgear and bus work at the Vernon east ring bus are upgraded accordingly. Due to the lack of space in Vernon Substation, various properties are under evaluation. However, the purchase of new real estate is currently not secured.

See Diagram on next page.

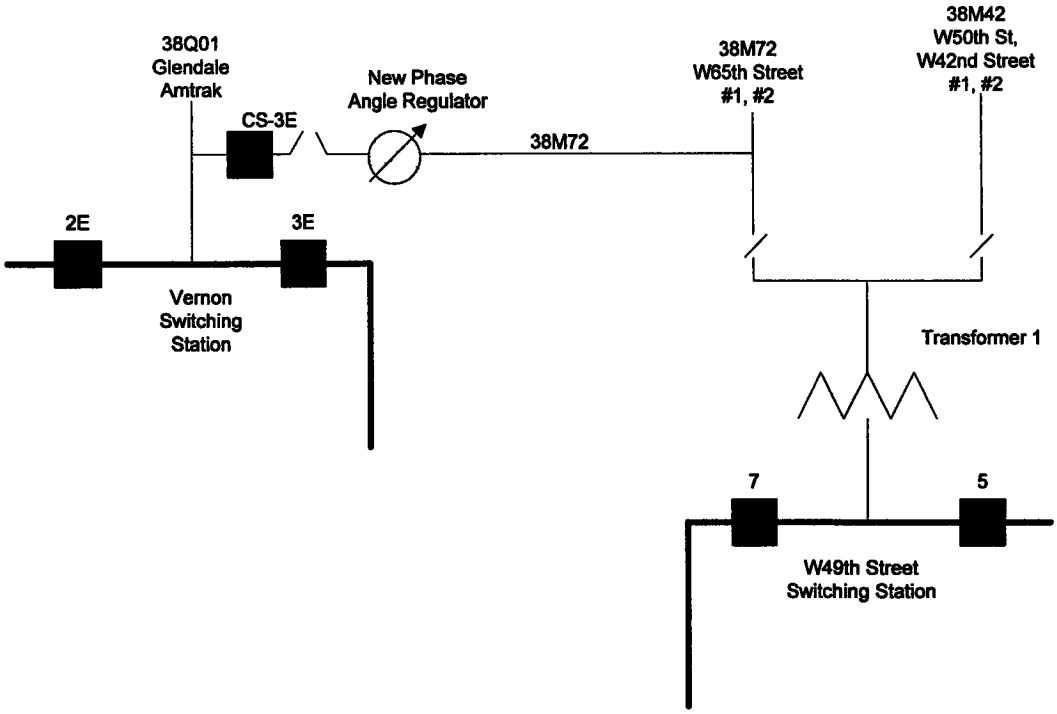
Estimated Completion Date:
May 2010

Status:
Planning

Funding ($000)

Forecast 2009	Forecast 2010	Forecast 2011	Forecast 2012	Forecast Total 2009-2012
20,144	22,000	-	-	42,144

Transmission Operations – 2009 Capital



Transmission Operations – 2009 Capital

Project/Program Title	Various - Dynamic Feeder Rating – 345 kV Feeders Phase II
Status	Planning
Estimated Service Date	On-going

Work Description:
Dynamic Feeder Rating (DFR) Systems consists of instrumentation installed on select feeder components to monitor data pertinent to feeder thermal capabilities, remote terminal units to process the various instrumentation installations, communication systems to transfer the processed data and central processing units which control the system and provide the dynamic ratings. In addition to the hardware, custom mathematical modeling and software development are required to provide an operational system. DFR systems will be installed at the rate of one per year.

Justification:
DFR Systems expanding the capabilities of feeders which allow greater power transfers and provide greater operational flexibility to the system operators.

Estimated Completion Date:
On-going

Status:
Planning

Funding ($000)

Forecast 2009	Forecast 2010	Forecast 2011	Forecast 2012	Forecast Total 2009-2012
1,000	1,000	1,000	1,000	4,000

2009 System and Transmission Operations – O&M

Project/Program Title	Sequence and Scheduling – Add 3rd SDO
Status	
Estimated Service Date	

Work Description:
The staff of the Sequence and Scheduling Group (SSG) needs to be expanded by an additional Scheduling District Operator to handle the workload increase that has occurred over the past few years and is projected to further increase.

Justification:
The staffing of the SSG is currently a Section Manger, two Scheduling District Operators (SDO) and four Scheduling Specialists. The group's workload has increased significantly over the past few years due to the following reasons:

- The additional coordination work and reviews of proposals/studies required for new generation and other major equipment connecting into the Con Edison system. The intensity of effort and coordination required for the NYPA GT work, the 345 kV and 138 kV series reactors, the SCS interconnections in Astoria East, the 345 kV capacitor banks at Millwood are examples of this work increase. This work not only requires additional sequencing efforts, but also SDO resources to schedule the outages and respond to requests for outage changes when conflicts or other schedule modifications arise;
- Changes to NYISO outage scheduling requirements implemented in 2005 have resulting in both an increased number of outages as well as a more stringent outage scheduling timetable. For example, many outages that used to be handled on a "on-watch" basis now require advanced scheduling by the SDO, to allow for proper determination of congestion costs by the NYISO in the day and even the month ahead energy marketplace;
- The increased emphasis on completing all periodic compliance items such as trip checks, tap changer inspections, and breaker DTs as well as on new high priority projects like the G&T certifications (follow up from the LIC related recommendations), the fast clearing relay upgrades, etc., on schedule caused the resources available to schedule and reschedule these items to be grossly outpaced. The additional Scheduling DO is also required to restore and maintain the flexibility related to last minute scheduling changes due to system conditions or work cancellations.
- A significant increase in capital work over the past three years has occurred, and is expected to be maintained or even increase over the next five years. This results in more outage requests needing to be processed for continuance, load relief, and system expansion. The addition of new equipment has also increased the number of outage requests needed for the equipment's periodic maintenance and compliance items requiring outages;

Annual workload for the SDO's has increased by 20% as measured by the number of Scheduled Work Packages processed during 2007 versus 2003. This workload increase has been partially offset by productivity improvements initiated in 2002 and, respectively, in 2007, as well as by increased overtime worked by the Scheduling DO's. During the same period of time, 2003 to 2007, the number of overtime hours has more than tripled. There were 3040 equivalent overtime hours in 2007. This level of overtime is equivalent to approximately1.6 man-year. The addition of a third Scheduling DO is expected to significantly reduce the overtime requirement for the position in the long run to only address trouble jobs and temporary surges in work requests.

2009 System and Transmission Operations – O&M

Estimated Completion Date:
On-going.

Funding ($000)

Historical Year 2007	Forecast RYE 2010	Forecast RYE 2011	Forecast RYE 2012	Forecast Total RYE 2010 - 2012
-	100	100	100	300

CONSOLIDATED EDISON COMPANY OF NEW YORK, INC.
CAPITAL AND O&M
SUPPORT ECONOMIC GROWTH
ELECTRIC OPERATIONS

DESCRIPTION	Page #
Reference Electric Operations Capital - IIP- 6	
New Business - ED1 costs	2
New Business - Meter Installation	6
System Reinforcement Area SS Load Relief	
White Plains to Rockview S/S	7
Sherman Creek to East 179th Street – 6 MW Transfer	8
Newtown	9
Astor (Herald Sq. Transfer)	10
Pennsylvania / Waterside	11
Hunter Transfer to East 75th St. Substation	12
Fox Hills/Fresh Kills Load Transfer Capability	13
Willowbrook Load Transfer	14
Randall's Island	15
York Substation to Lenox Hill	16
City Hall to Cortland 25 MW	17
Base Growth / Relief	
Primary Feeder Relief	18
Network Transformers Relief	19
Non-Network Feeder Relief (Open Wire)	20
Overhead Transformer Relief	22
Distribution Substation	
Distribution Substation Load Relief	23
Meter Purchases	25
Reference Electric Operations O&M - IIP-7	
Customer Focused Service Ruling Program	26
Smart Electric Technologies - New Program	28
500 MW DSM Monitoring and Verification	30
500 MW DSM Market Research Support	31
500 MW DSM Program Administration	32
500 MW DSM Training	33
500 MW DSM Website Development	34
Commercial Service Representative Automation	35

Electric Operations - 2009 Capital

Project/Program Title	New Business Capital
Status	
Estimated Service Date	Ongoing

Work Description:

Under $100K Class 2 Projects: To adequately supply proposed new customer loads, the Company must either replace an existing overhead service or an underground service cable in an existing service duct or install an additional service lateral in an existing vacant duct.

Under $100K Class 3 Projects: To adequately supply proposed new customer loads, the Company must either install a new service conduit and cable or a new overhead service.

Under $100K Class 4 Projects: To adequately supply proposed new customer loads, the Company must install either primary and/or secondary cable in vacant duct or a newly installed duct or additional OH primary/secondary spans/poles as well as new service cable.

Under $100K Class 5 Projects: To adequately supply proposed new customer loads, the Company must install either primary or secondary cable in vacant duct or a newly installed duct or additional OH primary/secondary spans/poles. Installation of transformers may also be required.

Under $100K Residential Development Projects: To adequately supply proposed new customer loads, the Company must install either primary or secondary cable in vacant duct or a newly installed duct or additional OH primary/secondary spans/poles. Installation of transformers may also be required.

Over $100K Projects (Major Projects): To adequately supply proposed new customer loads, the Company must install service cable, primary and/or secondary cable in vacant duct or newly installed duct, or additional OH primary/secondary spans/poles. Installations of transformers are also required and new or enlarged manholes may be required.

Justification:

In recent years NYC has issued record levels of new permits for new and or renovated buildings. There were 31,902 permits for new units of privately owned housing in 2007, 30,927 in 2006 and 31,599 in 2005 for New York City. While these trends are expected to level off, permit volumes are still at record levels and economic indicators continue to identify strong growth opportunities in our service territory some of which include; Ridge Hill Development in Westchester, Gotham Center in Queens and Tishman Hotel, Brookfield Offices Towers, Manhattan's West Side, Columbia's Manhattanville Campus, and Boston Properties Office Towers in Manhattan. Our system load growth is forecasted to increase 150 MW's per year over the next few years. This load growth is not only driving the need for new substations, it is also resulting in significant expansions to the local distribution system to connect these new or additional customer loads.

As we analyze the distribution system to connect these new loads, we find that in many cases the existing system is at or beyond its capability and the addition of this load can no longer be served by extending a service lateral from our distribution system. More specifically, many of these residential and commercial projects require extensive infrastructure such as; secondary main reinforcement, primary feeder extensions and transformer vault installations to adequately support these new/additional loads. The need for this additional reinforcement has increased the average service cost for the smaller non-vault projects to $6500 per service. In addition, there has

been a 14% increase in projects that resulted in capital cost over $100K with the average cost for these projects at approximately $350K.

Under $100K Class 2: The average cost to install a service has been relatively stable between 2005 and 2007. We anticipate the number of services to remain close to 5600 per year from 2009-2012. We also anticipate the average cost to install a service in this category to be approximately $1.1K per service.

	Class 2		
	2005	2006	2007
Actual Dollars	$5,637,000	$6,857,000	$5,908,000
Actual Services	5161	6200	5568
Average Cost per Service	$1,092	$1,106	$1,061

Under $100K Class 3: The number of services installed has been going up every year with a significant increase in the amount of service conduit installed per service. We anticipate the service number to remain close to 3400 per year from 2009-2012. The average service cost is also estimated to be approximately $8K.

	Class 3		
	2005	2006	2007
Actual Dollars	$21,289,120	$28,093,000	$29,941,000
Actual Services	3069	3408	3675
Average Cost per Service	$6,937	$8,243	$8,147

Under $100K Class 4: The number of services installed has gone down in 2007, but the average cost to install a service continues to increase. This cost increase is due to an overall increase in system reinforcement work associated with these projects. As we continue to expand the scope of these projects by adding more infrastructure to support the customer load, we anticipate that these projects will become Class 5 or major projects. As a result, the number of services for Class 4 work is expected to decrease to approximately 1500 per year in 2009 and approximately 1150 annually for 2010 to 2012. The average cost per service is estimated to be approximately $13K.

	Class 4		
	2005	2006	2007
Actual Dollars	$16,458,000	$16,157,000	$19,738,000
Actual Services	3039	1753	1531
Average Cost per Service	$5,416	$9,217	$12,892

Under $100K Class 5: The number of services installed in this category of work has been going up every year. This is due to an overall increase in system reinforcement and infrastructure associated with projects therefore resulting in a shift of work from Class 4 to Class 5. We anticipate the service numbers for this class to remain close to 550 per year for 2009 and 400 annually for 2010-2012 as well as the average cost per service to be approximately $33K.

Electric Operations - 2009 Capital

	Class 5		
	2005	2006	2007
Actual Dollars	$18,242,000	$21,208,000	$20,816,000
Actual Services	501	545	853
Average Cost per Service	$36,411	$38,914	$24,403

Under $100K Residential Developments: The number of services installed has been going up every year as well as the average cost to install a service. In 2004, nearly all the services were in Staten Island. Since then, the residential development work has been shifted to Bronx/Westchester. In 2007, Bronx/Westchester spent $2.5 million of the $2.9 million system wide. Although this category has the most fluctuations out of all the Under $100K projects, we anticipate the service number to remain close to 440 per year from 2009-2012, at an estimated cost of $4K per service.

	RDV		
	2005	2006	2007
Actual Dollars	$828,285	$1,316,000	$2,885,000
Actual Services	348	238	727
Average Cost per Service	$2,380	$5,529	$3,968

Over $100K Major Projects: The number of appropriations has increased every year. This increase in the volume of work is mainly due to increased system reinforcement work, where in many cases, a transformer installation is required to provide adequate supply to meet customer loads. We estimate that the average cost for these projects will be approximately $350K.

	Major Projects		
	2005	2006	2007
Actual Dollars	$34,000,000	$48,,000,000	$60,000,000
Major Projects	107	135	170
Average Cost Per Project	$321,000	$356,000	$355,000

In addition to the above projections, there are two major projects in Westchester requiring significant infrastructure investments in 2009, 2010 and 2011 to support new customer loads. These projects will require in total $36 million dollars over the three years 2009 - 2011. In 2009, approximately $25 million dollars will be spent ($15 million for Ridge Hill and $10 million for the Croton Water Treatment Plant.) In 2010, approximately $6 million will be spent ($3 million for each project) and in 2011 approximately $5 million will be spent to complete the Croton Water treatment Plant.

Ridge Hill Development – Is a large commercial and residential development with an estimated demand of 18 MW's. The Company will be installing 11 multi-bank transformer installations consisting of 26 network transformers and associated conduit, manholes and primary feeders. Primary feeders will be extended from the Rockview Substation to the transformer installations within the Ridge Hill Development. All Company work within the site will be done in conjunction with the customer construction activities in order to coordinate the installation of all facilities within the development and to meet the customer's service needs.

Croton Water Treatment Plant – This is a new water treatment plant with an estimated demand of 29 MW's. The Company will supply this load with a 4 feeder high tension service. The scope

of work includes multiple manhole installations along with primary conduit and cable extensions from the Rockview Substation.

Estimated Completion Date:
Ongoing

Status:
Ongoing process where the Company regularly receives customer service requests, evaluates these requests, and develops an adequate service supply.

Funding ($000)

Capital

Forecast 2009	Forecast 2010	Forecast 2011	Forecast 2012	Forecast Total
157,000	143,000	142,000	142,000	584,000

Electric Operations - 2009 Capital

Project/Program Title	Meter Installation
Status	
Estimated Service Date	Ongoing

Work Description:
Installation of Company revenue meters.

Justification:
1) Company revenue meter installations are increasing between all operating Regions, due to increased new business work.
2) We have mandated testing requirements for meters in order to maintain an efficient population of meters on our electric system. This process results in replacement of electromechanical meters when found as a result of this random selection of meters to test.

Estimated Completion Date:
Ongoing

Status:
Ongoing process where the Company regularly installs revenue meters

Funding ($000)

Capital

Forecast 2009	Forecast 2010	Forecast 2011	Forecast 2012	Forecast Total
17,721	17,771	18,071	18,071	71,634

Electric Operations - 2009 Capital

Project/Program Title	White Plains to Rockview Substation 2012 - 30 MW
Status	Preliminary Design
Estimated Service Date	2012

Work Description:
Transfer 30 MW of load from the White Plains Substation to the Rockview Substation. This project will transfer 30 MW of load which supplies two MTA high tension services, five unit substations, one isolated network, and Garth Road Network from the White Plains Substation to the Rockview Substation. This project will be accomplished by establishing two new 13kv feeders and extending them along with six other existing feeders from the Rockview Substation into the White Plains Load area.

This project will include 1,000 trench feet of conduit work, 2 new structures, 112 sections of new primary cable, 940 sections of new overhead wire, 60 overhead transformer installations, and 300 new poles. This work is estimated to cost $2M in 2010, $10M in 2011 and $5M in 2012.

Based on an analysis of the area substations and sub-transmission feeders, as reported in the *'2008-2017 Area Substation and Sub-transmission Feeder Ten-Year Load Relief Program (which includes DSM phases 1, 2, and 3 with an additional 500 MW)'* it is projected the White Plains Substation will exceed its capability of 262 MW (101%) by in the summer of 2012. To relieve these overloads, it is planned to transfer 30 MW from White Plains Substation to the Rockview Substation. This project will result in White Plains Substation operating within its capability and maintaining capacity for future load growth beyond 2017.

Estimated Completion Date:
2012

Status:
Preliminary Design

Funding ($000)

Forecast 2009	Forecast 2010	Forecast 2011	Forecast 2012	Forecast Total
$0	$2,000	$10,000	$5,000	$17,000

Electric Operations - 2009 Capital

Project/Program Title	Sherman Creek to East 179th Street – 6MW Transfer
Status	Engineering Design
Estimated Service Date	2009

Work Description:

Transfer 6 MW from the Riverdale Network fed by the Sherman Creek Substation back to the Fordham Network fed by East 179th Street Substation. This project will transfer the high tension service to Veterans' Hospital from Sherman Creek Substation to East 179th Street Substation.

Justification:

In order to relieve an overload at the East 179th Street Substation, a high tension service, HTV-6007, Veteran's Hospital, was temporarily transferred to the Sherman Creek Substation in 2007 until construction on a larger project to transfer load from the East 179th Street Substation to the Mott Haven Substation can be completed. With this proposed load transfer scheduled to be completed in the Spring of 2009, this 6 MW customer will be transferred back to the East 179th Street substation in accordance with the *'2008-2017 Area Substation and Sub-transmission Feeder Ten-Year Load Relief Program (which includes DSM phases 1, 2, and 3 with an additional 500MW)'*. When Veteran's Hospital was transferred to Sherman Creek, we kept the original cable in place anticipating the switch back. This cable will be HiPot tested to ensure it is reliable before it is re-used to re-establish the connection to East 179th Street Substation.

Estimated Completion Date:

2009

Status:

Engineering Design

Funding ($000)

Forecast 2009	Forecast 2010	Forecast 2011	Forecast 2012	Forecast Total
$500	$0	$0	$0	$500

Electric Operations - 2009 Capital

Project/Program Title	Newtown
Status	Planning
Estimated Service Date	2011

Work Description:
Transfer 207 MW from the North Queens substation, which supplies the Long Island City Network, to establish the two new networks in addition to the existing LIC network. The plan will split the existing LIC network into three networks, through the creation of two new networks, Sunnyside and Borden, which will consequently create a smaller, more reliable LIC network. The new LIC network will only cover the area that is north of Northern Blvd. The new Borden Network will pick up 127 MW of load from the part of the existing LIC network that is south of Northern Blvd. and west of 33rd Street. The new Sunnyside Network will pick up 80 MW of load from the part of the existing LIC network that is south of Northern Blvd and east of 33rd Street. These two new networks will in total de-load the existing LIC Network by 207 MW, decreasing the North Queens Area Station loading to 250MW by 2011 (it has a capability of 483MW). Following the split the Borden network will be 127 MW, the Sunnyside network will be 80 MW and the remaining LIC network will be 225MW. The 16 feeder Borden Network and the 12 feeder Sunnyside Network would be served from a new three-bank area substation (Newtown Substation). The station will be located 47th Ave, between 33rd and 34th Streets. In addition, some rearrangement of the existing feeders will be required to address feeder banding and diversity.

The LIC Network Split will require 34,500 trench ft of conduit, 50 manholes, 14 new vaults, approximately 600 sections of primary cable, 300 sections of secondary cable, 18 flood switches, and 14 new 500kVA transformers. The estimated cost for this work is $10M in 2009 and $8M in 2010. The budget for 2009 includes $601K for labor, $2,190K for materials and supplies, $4,559K for contractor work and major equipment etc., $5 for other miscellaneous costs, and $2,639 in indirect costs. The budget for 2010 includes $1,508K for labor, $2,744K for materials and supplies, $1,435K for contractor work and major equipment etc., and $2,313 in indirect costs.

Justification:
Some existing 1Q feeders are highly loaded and are likely to experience main line overloads in future summer preparation studies. If we do not proceed the LIC network split as detailed in this program, the highly loaded feeders in the LIC network will need to be addressed only by 750MCM cable in new duct systems which must be extended from North Queens to the load growth area which is in the southern part of the network. This cable replacement is very expensive and time-consuming. Splitting the Long Island City Network is a sure way of eliminating this recurring expense involved with cable replacement. This load relief program which will split the LIC Network into three smaller networks, as opposed to 2 networks in the original plan, will further improve the reliability of the area as a whole. In addition to relieving the LIC Network, the split will drastically reduce the cost of upgrading the equipment in the LIC Network in advance of each summer since the network load would be relatively low.

Estimated Completion Date:
2011

Status:
Planning

Funding ($000)

Forecast 2009	Forecast 2010	Forecast 2011	Forecast 2012	Forecast Total 2009-2012
$10,000	$8,000	$0	$0	$18,000

Electric Operations - 2009 Capital

Project/Program Title	Astor (Herald Sq. Transfer)
Status	On going
Estimated Service Date	2009

Work Description:
Transfer 114 MW of the Herald Square Network fed by the West 42nd Street No. 2 Substation in its entirety to the new Astor substation. This project will be accomplished by establishing a primary intermesh to extend 16 distribution feeders from the Astor substation to various pick up points in the Herald Square Network for load transfer.

In 2009 this project will include 3,000 trench feet of conduit work, 15 new structures, and 80 sections of new underground primary cable. This work is estimated to cost $3M in 2009

Justification:
Based on an analysis of the area substations and sub-transmission feeders, as reported in the *'2008-2017 Area Substation and Sub-transmission Feeder Ten-Year Load Relief Program (which includes DSM phases 1, 2, and 3 with an additional 500MW)'* it is projected the West 42nd Street No.2 substation will exceed its capability of 267 MW (101%) in the summer of 2009. This project will result in West 42nd Street No.2 operating within its capability and maintaining capacity for future load growth beyond 2017. An alternative to this transfer would be the transfer the Columbus Circle network (155 MW) from West 42nd Street No.2 to the new Astor substation. This would result in Astor being beyond its capability in 2014, and would require an addition load transfer project and additional expenditures.

Estimated Completion Date:
This project will begin in 2008 and complete by the summer of 2009.

Status:
Ongoing

Funding ($000)

Forecast 2009	Forecast 2010	Forecast 2011	Forecast 2012	Forecast Total 2009-2012
$3,000	-	-	-	$3,000

Electric Operations - 2009 Capital

Project/Program Title	Pennsylvania / Waterside
Status	Planning
Estimated Service Date	2010

Work Description:
Establish a network split by transferring 65 MW from Pennsylvania Network fed by the West 42nd Street No. 1 Substation to create a new Waterside Network fed by the West 42nd Street No. 2 Substation. This project will be accomplished by carving a portion of the Pennsylvania Network and creating new 13kV feeders that will be extended to various pick up points. The project will also require secondary reinforcement in the vicinity of the new network boundaries.

This project will include 12,000 trench ft of conduit work, 13 new structures, 70 sections of new underground primary cable, 25 sections of new secondary cable, and 1 transformer installation. This work is estimated to cost approximately $4.5M in 2009 and $2.1M in 2010.

Justification:
Based on an analysis of the area substations and sub-transmission feeders, as reported in the *'2008-2017 Area Substation and Sub-transmission Feeder Ten-Year Load Relief Program (which includes DSM phases 1, 2, and 3 with an additional 500MW)'* it is projected that the West 42nd Street No. 1 Substation will exceed its capability of 271 MW by (105%) in the summer of 2010. The completion of this project will result in the West 42nd Street No. 1 Substation being loaded to 215 MW (79%) for the summer of 2010. This project will result in West 42nd Street No. 1 Substation operating within its capability and maintaining capacity for future load growth beyond 2017. This proposed transfer takes advantage of the vacated station cubicles at West 42nd Street No.2 (result of transferring Herald Square network in 2009). Additionally, West 42nd Street No.2 is within the boundaries of the new Waterside network. Alternative solutions to de-load West 42nd Street No.1 would result in not establishing a new network; instead a smaller portion of the Pennsylvania network will be carved out and combined with a neighboring network. This would require feeder extensions and additional secondary reinforcement.

Estimated Completion Date:
This project will be completed by the summer of 2010.

Status:
Planning

Funding ($000)

Forecast 2009	Forecast 2010	Forecast 2011	Forecast 2012	Forecast Total 2009-2012
$4,500	$2,100	-	-	$6,600

Electric Operations - 2009 Capital

Project/Program Title	Hunter Transfer 88MW
Status	Planning
Estimated Service Date	2012

Work Description:
Transfer 87 MW of the Hunter Network fed by the East 63rd Street No.1 Substation in its entirety to the East 75th Street Substation. This project will be accomplished by establishing a primary intermesh to extend distribution feeders from the East 75th Street Substation to various pick points in the Hunter Network to transfer the load.

This project will include 30,000 trench ft of conduit, 80 new structures, and 365 sections of new underground primary cable. The estimated cost for this work is $1.1M in 2010, $14.1M in 2011, and $3.7M in 2012.

Justification:
Based on an analysis of the area substations and sub-transmission feeders, as reported in the *'2008-2017 Area Substation and Sub-transmission Feeder Ten-Year Load Relief Program (which includes DSM phases 1, 2, and 3 with an additional 500 MW)'* it is projected the East 63rd Street No.1 substation will exceed its capability of 254 MW (101%) by in the summer of 2012. This project will result in East 63rd Street No.1 operating within its capability and maintaining capacity for future load growth beyond 2017. An alternative to de-load East 63rd Street No.1 would be to transfer a portion of the Sutton network (supplied by East 63rd Street No.1) to East 75th Street. This would require additional funding to carve a portion of the Sutton network and reinforce the secondary grind in the vicinity of the new cut line.

Estimated Completion Date:
This project will be completed by the summer of 2012.

Status:
Planning

Funding ($000)

Forecast 2009	Forecast 2010	Forecast 2011	Forecast 2012	Forecast Total 2009-2012
-	$1,100	$14,100	$3,700	$18,900

Electric Operations - 2009 Capital

Project/Program Title	Fox Hills / Fresh Kills Load Transfer Capability
Status	Planning
Estimated Service Date	2009

Work Description:
Create a remotely operable tie between 33R02 and 33R12, via new aerial cable along Forest Ave. between Silver Lakes #2 and Westerleigh unit substations. This will include 14,000' of aerial cable, 1,600' of underground conduit and cable, 6 manholes, two 33KV SCADA switches, and the replacement of 25 poles.

Justification:
Terrace Substation is supplied from two 33 kV feeders from Fresh Kills Area Substation. It serves more than 3,000 residential and commercial customers, including the Port Richmond Pollution Control Plant, which processes all of the waste for the northern half of Staten Island. The loss of the two feeders that supply this substation would result in a reduction of the plants operation and would interrupt service to approximately 3,000 customers for an extended period of time. The ability to isolate faults and restore un-faulted portions of 33R02 via an emergency tie to 33R12 would enhance our ability to restore Terrace Substation to service in an expeditious manner.

There are currently 5 ties between Fresh Kills and Fox Hills substations. These ties enable load to be transferred from one station to the other during contingencies, thereby facilitating resource sharing. The new tie that will be created between feeder 33R02 originating in Fresh Kills and 33R12 originating in Fox Hills will provide additional load transfer capability. The new tie will also provide more flexibility of operation on those two feeders (neither one currently has any tie switches) because it will enable us to keep portions of the feeders in service while working on a de-energized portion.

Estimated Completion Date:
2009

Status:
Planning

Funding ($000)

Forecast 2009	Forecast 2010	Forecast 2011	Forecast 2012	Forecast Total
$1,200	-	-	-	$1,200

Electric Operations - 2009 Capital

Project/Program Title	Willowbrook Load Transfer
Status	Planning
Estimated Service Date	**2012**

Work Description:
Transfer 6 MW from the Willowbrook Substation to the Fresh Kills Substation. This project will shift load from loop systems fed out of Willowbrook Substation to loop systems fed out of Fresh Kills Substation, by creating new mini loops fed from step down transformers.

This project will include 400 spans of aerial cable in 2012 at an estimated cost of $3M.

Justification:
Based on an analysis of the area substations and sub-transmission feeders, as reported in the *'2008-2017 Area Substation and Sub-transmission Feeder Ten-Year Load Relief Program (which includes DSM phases 1, 2, and 3 with an additional 500 MW)'* it is projected the Willowbrook substation will exceed its capability of 97 MW (101%) by in the summer of 2012. This project will result in Willowbrook operating within its capability and maintaining capacity for future load growth beyond 2017.

Estimated Completion Date:
2012

Status:
Planning

Funding ($000)

Forecast 2009	Forecast 2010	Forecast 2011	Forecast 2012	Forecast Total 2009-2012
-	-	-	$3,000	$3,000

Electric Operations - 2009 Capital

Project/Program Title	Randall's Island
Status	Planning
Estimated Service Date	2009

Work Description:
To meet demand at Randall's Island and to accelerate the relief an overload at Hellgate Substation, it is proposed to transfer 33 MW of Randall's Island in its entirety from the Hellgate Substation to the Bruckner Substation prior to the summer of 2009. This project will be accomplished by routing six new feeders from the Bruckner Substation to the Randall's Island via Submarine Crossing #21 (Bronx Kills). To accomplish this, new cable and subway will be installed in the Bronx and on Randall's Island. Three new conduit systems will be installed over the Bronx Kills, two of which will replace existing systems.
This project will include 500 trench feet conduit work, 3 new structures, and 40 sections of new cable in 2009.

Justification:
Based on an analysis of the area substations and sub-transmission feeders, as reported in the '2008-2017 Area Substation and Sub-transmission Feeder Ten-Year Load Relief Program (which includes DSM phases 1, 2, and 3 with an additional 500MW)' it is projected the Hellgate Substation will exceed its capability of 355 MW (101%) in the summer of 2014. The advancement of this load transfer is required to supply the future needs of the Randall's Island.

The completion of this project will result in Randall's Island being fed by an independent network (Randall's Island Network) fed by Bruckner Substation via six 13kV feeder from the Bruckner Substation. This project will result in Hellgate Substation operating within its capability and maintaining capacity for future load growth beyond 2017. Additionally, following this transfer the Yorkville Network feeders fed from Hellgate Substation will only supply load in Manhattan. An alternative to de-load the Hellgate substation would be to transfer a portion of the Yorkville network to the Parkview network which would require feeder extensions from Parkview (East 130 Street and Park Avenue to the Yorkville network East 110th Street) and reinforcement of the secondary grid in the vicinity of the new boundary. This scope of work would be in addition to the scope above, as Randall's Island would require a six feeder supply.

Estimated Completion Date:
This project will begin in 2008 and complete by the summer of 2009.

Status:
Planning

Funding ($000)

Forecast 2009	Forecast 2010	Forecast 2011	Forecast 2012	Forecast Total 2009-2012
$2,500	-	-	-	$2,500

Electric Operations - 2009 Capital

Project/Program Title	York Substation to Lenox Hill
Status	Planning
Estimated Service Date	2011

Work Description:
Establish a network split by transferring 157 MW from Lenox Hill Network fed by the East 75th Street Substation to create a Cornell Network fed by the new York Substation. This project will be accomplished by carving a portion of the Lenox Hill network and creating new 13kV feeders that will be extended to various pick up points. The project will also require secondary reinforcement in the vicinity of the new network boundaries.

This project will include 25,400 trench ft of conduit, 26 new structures, 245 sections of new underground primary cable, 40 sections of new underground secondary cable, and 5 new transformer installations. The estimated cost for this work is $1.8M in 2009, $10.6M in 2010, and $5.2M in 2011.

Justification:
Based on an analysis of the area substations and sub-transmission feeders, as reported in the *'2008-2017 Area Substation and Sub-transmission Feeder Ten-Year Load Relief Program (which includes DSM phases 1, 2, and 3 with an additional 500MW)'* it is projected the East 75th Street substation will exceed its capability of 275 MW by (101%) in the summer of 2011. To relieve this overload, a 157MW of the Lenox Hill Network will be transferred to the York Substation creating a new Cornell Network. This project will result in East 75th Street operating within its capability and maintaining capacity for future load growth beyond 2017. Additionally, the York substation will be within the boundaries of the new Cornell network. Alternates to this plan would be to transfer load to either East 63rd Street No.1 or East 63rd Street No.2 substations. Both of these stations have planned load transfers in 2016 and would not have the capability to accommodate the new Cornell network.

Estimated Completion Date:
This project will be completed by the summer of 2011.

Status:
Planning

Funding ($000)

Forecast 2009	Forecast 2010	Forecast 2011	Forecast 2012	Forecast Total 2009-2012
$1,800	$10,600	$5,200	-	$17,600

Electric Operations - 2009 Capital

Project/Program Title	City Hall to Cortlandt 25 MW
Status	Planning
Estimated Service Date	2010

Work Description:
Transfer 25 MW from the City Hall Network fed by the Cherry Street Substation to the Cortlandt Network fed by the Seaport No.1 Substation. This project will be accomplished by extending Cortlandt Network feeders into the western load pocket of the City Hall Network to pick up 25 MW of load. In addition, four SF-6 sectionalizing switches will be installed.

This project will include 3,800 trench ft of conduit, 2 new structures, and 55 sections of new underground primary cable. This work is estimated to cost $1.1M in 2009 and $2M in 2010.

Justification:
This project will improve the distribution system reliability of the load pocket area being transferred. The City Hall Network feeders will realize an increased reliability due to decreased loading. At the end of this project in the summer of 2010 the loading of the City Hall Network will be 162 MW, and the loading of the Cortlandt Network will be 80 MW. This project will result in Cherry Street Substation and Seaport No.1 Substation operating within its capability and maintaining capacity for future load growth beyond 2017. The SF-6 sectionalizing switches will improve feeder restoration and network reliability.

Estimated Completion Date:
This project will be completed by the summer of 2010.

Status:
Planning

Funding ($000)

Forecast 2009	Forecast 2010	Forecast 2011	Forecast 2012	Forecast Total 2009-2012
$1,100	$2,000	-	-	$3,100

Electric Operations - 2009 Capital

Project/Program Title	Primary Feeder Relief
Status	On Going
Estimated Service Date	On Going

Work Description:
Reinforce distribution feeders that are projected to operate above 100 % of their ratings, for both normal (all equipment in service) and contingency (any two feeders out of service, N-2) conditions during the summer peak load periods. Reinforcement projects may include cable replacement, transferring load between feeders, balancing load on a given feeder, bifurcating an existing feeder, and establishing new feeders.

This project is separate from other load relief projects which are intended to address projected substation overloads. The primary feeder relief program is focused on proactively reinforcing distribution feeders across the underground network system that is projected to be overloaded during the upcoming summer peak periods.

We anticipate we will relieve about 1,300 sections of underground primary and aerial cable each year. This will involve approximately 60,000 trench ft of associated conduit work and 35 new structures each year.

Justification:
Distribution feeders will operate within their design capabilities for both normal and up to N-2 contingencies during peak summer conditions. Reinforcement will ensure there is adequate supply in the network, the feeders will continue to operate within their design capabilities, and the feeders will have capacity for projected demand growth.

Primary feeder relief is an annual relief program to maintain and enhance the integrity of our network to provide our customers with the most reliable service possible. This program has been a continuous effort for many years.

Estimated Completion Date:
On going

Status:
On going

Funding ($000)

Forecast 2009	Forecast 2010	Forecast 2011	Forecast 2012	Forecast Total 2009-2012
$43,288	$43,808	$44,342	$44,295	$175,733

Electric Operations - 2009 Capital

Project/Program Title	Network Transformer Load Relief
Status	Ongoing
Estimated Service Date	Ongoing

Work Description:
Provide relief for network transformers that are projected to operate greater than 100% of their normal (all equipment in service) ratings and 100% of their contingency (N-2). Relief projects include replacing the overloaded transformer with a new transformer that has a higher rating, a larger transformer with a greater capacity, or introducing a new transformer to the system with associated secondary reinforcement which will diversify the area load effectively lowering the loads of all the nearby transformers. The program will consist of addressing the projected overload transformer in priority order.

Justification:
Transformers that operate at or over their design temperature for extended periods of time are susceptible to degradation of the internal components as per manufacture specification. This degradation can lead to premature failure. An in service unit that fails causes the feeder to open automatically. This creates an N-1 in the network and places additional burden on the connecting secondary mains and nearby transformers for all transformers associated with the failed feeder.

Historically finding, repairing or dropping and returning a feeder to service can take from 12 to 14 hours. This additional load on the secondary system for this period of time could cause other failures in weak spots in the secondary which can lead to smoking manholes, manhole explosions, secondary burnouts, loss of supply to customers and additional feeder interruptions. Loss of additional feeders in the network has the potential to repeat the cycle with a higher probability of additional damage to the infrastructure as well as loss of service to additional customers.

Relieving network transformers that are projected to be above 100% normal rating and their contingency rating will ensure feeder stability as well as adequate supply during peak summer conditions.

In order to increase the reliability of the secondary network, it is necessary to lower the average network transformer loading on the system both during normal and contingency conditions and thus reduce the likelihood of overloads and possible equipment failures. The objective of this program is to de-load the program transformers as detailed in our design specification EO-2002 Loading Limits For Network Transformers and Associated Protectors. These projects will improve the secondary network distribution system reliability, quality of service and extend the operating life of this equipment.

Estimated Completion Date:
The Company goal is to relieve all transformers that are above 115% by end of 2011.

Status:
On Going

Funding ($000)

Forecast 2009	Forecast 2010	Forecast 2011	Forecast 2012	Forecast Total 2009-2012
$54,700	$45,620	$46,158	$46,460	$192,938

Electric Operations - 2009 Capital

Project/Program Title	Non-Network Feeder Relief
Status	Ongoing
Estimated Service Date	Ongoing

Work Description:
This program provides for the reinforcement of open-wire and underground cable on non-network system feeders that are projected to operate above 100% of their normal or emergency rating. This program involves replacement of overhead feeder wire, poles, risers, underground cable and associated equipment.
In order to address overload conditions of non-network feeders, a number of methods may be implemented as listed below:

- Replace existing cable with cable of greater capacity
- Rearrange feeders to swap load
- Create a new feeder

The method chosen for each specific overload is determined using engineering cost-benefit analysis.

Justification:
As system load continues to increase, the existing feeders are reaching their design limits. Feeder peak load and calculated feeder rating are used to determine if a feeder needs reinforcement. The process for rating a feeder is specified in *EO-2048 'Determination Of Distribution Feeder Ratings 60 Cycle Systems'*. If the projected feeder load for the "in-service year" is larger than the feeder rating for that year, then reinforcement of the feeder is required. According to *EO-2072 'Method Of Planning Reinforcement Of Network and Radial Feeders Operating at 13, 27 & 33 kV'*, when an overload is determined, plans for eliminating the overload must provide a reasonable margin to cover 3-yrs into the future (the next in-service year, and two years into the future). Reinforcement plans generally call for eliminating small size cables, establishing new feeders or transferring load by rearrangement of feeders. With the increase in wire and equipment size, the existing poles and fixtures may no longer have the capability of supporting the additional weight and may require replacement as well. Many of our feeders are reaching a point where the only way to de-load is to create a new feeder.

Estimated Completion Date:
Ongoing

Planning and Budgeting:
In 2007 we replaced 6,245 primary and aerial cable spans and 301 sections of underground primary cable. Historical spending on these replacements is as follows:

Historical Spending

2005	2006	2007
$ 10,157	$ 9,612	$ 21,494

Each year we plan to replace approximately 169 poles, 1,477 open wires, 1,217 sections of conduit, 1 structure, 165 spans of aerial cable 1,240 sections of primary cable, 297 sections of secondary cable and 93 overhead transformers associated with the non network feeder relief program. The annual budget is estimated to be approximately $11.5M.

Status:
Ongoing

Electric Operations - 2009 Capital

Funding ($000)

Forecast 2009	Forecast 2010	Forecast 2011	Forecast 2012	Forecast Total
11,536	11,672	13,011	13,100	49,319

Electric Operations - 2009 Capital

Project/Program Title	Overhead Transformer Relief
Status	New Program
Estimated Service Date	Ongoing

Work Description:
This program is to replace overhead transformers that are overloaded and have the greatest potential to trip during a summer heat event. Many of our overhead transformers are Completely Self Protected. This means that when they are overloaded they automatically trip. We call this a 'CSP trip'.

Justification:
While the CSP trip is advantageous to our system to keep our transformers from overloading which can become a safety hazard if not properly protected, when a CSP trip occurs, it breaks the connection from the transformer to the customer which results in an outage. By identifying the potential overloaded transformers before the peak summer period, and designing jobs to relieve the overload, we can reduce the number of possible customer outages caused by CSP trips.

During summer heat events, we would receive several hundred emergency tickets that previously indicated possible overhead transformer problems. Currently we are using a computer application (Load Aggregator), to proactively identify and prioritize transformers that have the greatest potential to trip under summer heat event loads.

This program is used proactively to assess possible overloaded transformers on a yearly basis. We project the requirement for relieving overloaded transformers and associated overhead secondary will be approximately the same from year to year.

In 2007, Con Edison was able to prevent inconvenient outages to our customers by replacing 44 overloaded overhead transformers at a cost of $380,000.

Estimated Completion Date:
On-going

Planning and Budgeting:
Each year we plan to replace approximately 122 overhead transformers due to overloading. The annual budget is estimated to be $2.19M.

Status:
New Program

Funding ($000)

Capital

Forecast 2009	Forecast 2010	Forecast 2011	Forecast 2012	Forecast Total
2,192	2,192	2,192	2,192	8,768

Electric Operations - 2009 Capital

Project/Program Title	Distribution Substation Load Relief
Status	Ongoing
Estimated Service Date	Ongoing

Work Description:
During the budget year 2000, a commitment was made by the Company to upgrade the capacity of unit and multi-bank substations.

Distribution Planning and the Regional engineering organizations calculate the projected substation peak loads during the worst-case contingencies. Staten Island and Westchester regions perform single contingency analysis to project their emergency peak load. The Bronx, Brooklyn and Queens regions perform second contingency analysis to project their emergency peak load. Distribution Substation Engineering calculates the transformer, breaker and bus ratings from the Unit Substation Automation (USA) database. If the projected peak load is higher than the substation equipment rating, then the station is listed for an upgrade.

The USA/USA2 database has been used to monitor the station actual loads during system peak conditions. This information is then utilized in the calculations to determine the station peak load during contingencies. Distribution Substation Engineering also utilizes the USA database to determine the transformer load cycle to calculate the transformer emergency rating.

Justification:
On 3-10-08 Distribution Planning issued a preliminary list of the distribution substations projected to be above their emergency ratings for the summer of 2009. There were 8 stations above 100% which require a new transformer and/or bus and breaker upgrade. The stations that are projected to be above 100% are as follows:

Willowbrook No. 1	105%	(replace transformer, main breaker and bus)
Sherwood Park-16	105%	(replace transformer, main breaker and bus)
Heathcote-23	104%	(replace transformer, main breaker and bus)
Willowbrook No. 2	104%	(replace transformer, main breaker and bus)
Green Knolls-60	103%	(replace transformer, main breaker and bus)
Sargent Place-61	101%	(replace transformer, main breaker and bus)

2 unit substations will have just a bus and breaker upgrade in 2009.

Replace the overloaded equipment that exceeds 100% of its emergency rating with new equipment with higher kVA capacity and/or make load transfers to other areas that are less loaded. See above for the proposed work at each station.

Also, to prepare for the summer of 2010 we will purchase and receive by December 2009, 6 new triple primary voltage rated 10,500 kVA units for a cost approximately $3,600,000 in 2009.

Once the above work is complete, there will be no distribution substation above 100% of its emergency rating.

Estimated Completion Date:
Ongoing

Electric Operations - 2009 Capital

Status:
Ongoing

Funding ($000)

Forecast 2009	Forecast 2010	Forecast 2011	Forecast 2012	Forecast Total 2009 - 2012
6,400	6,400	6,400	6,400	25,600

Electric Operations - 2009 Capital

Project/Program Title	Meter Purchases
Status	Ongoing
Estimated Service Date	Ongoing

Work Description:
The annual purchase requirements are based on a three–year average of installations, removals, shop reconditioning activity and program changes submitted by the operating areas and Customer Operations. This is performed in accordance with the guidelines of Corporate Instruction CI 320-3.

The 2008 budget will include the third year of the mechanical demand register meter retirement program and a new item for expected PSC request to provide Real Time Pricing for additional customers. Rate case meter projects are not included in this budget request.

Justification:
This request is to purchase revenue meters and associated metering equipment for revenue collection and as required by PSC regulation.

Estimated Completion Date:
Ongoing

Planning and Budgeting:

Status:
Ongoing

Funding ($000)

Forecast 2009	Forecast 2010	Forecast 2011	Forecast 2012	Forecast Total 2009 - 2012
12,349	9,802	10,036	11,967	44,154

Electric Operations - 2009 Operations & Maintenance (O&M)

Project/Program Title	Customer Focused Service Ruling Program
Status	
Estimated Service Date	Ongoing

Work Description:
Customer Engineering is charged with evaluating all customer requests to add new or additional load to our distribution system and develop an adequate service design to meet the customer's service needs in accordance with our system design requirements.

Once these designs are developed they are presented to our customers so that they can incorporate our service requirements into their building infrastructure design. The level of customer satisfaction achieved is dependent on the overall timeliness of these rulings. On larger more complex projects involving transformer vault installations, it is essential that we provide this information very early in the customer's design stage because it is a key element for them to complete their building design. Delays on our part in providing these service rulings may result in a customer incurring costly building redesigns and or project delays.

Large more complex projects require extensive system studies requiring more time to complete a detailed analysis and design of our distribution system with the degree of technical excellence required to maintain the integrity of our system's reliability. Many of these projects result in significant infrastructure needs such as; secondary mains reinforcement, primary feeder extensions and transformer vault installations to adequately support this new/additional load. In addition, the construction documents (Company layouts) for these projects are equally as complex. They require extensive evaluation and subsurface investigation because of the many unique field conditions and sidewalk constraints making vault placement difficult and it often necessitates pre fielding, test pits and soil borings to ascertain the constructability of the infrastructure as proposed. In construction layouts we have experienced approximately a 3% increase over the past year and approximately a 70% increase from 2004. We augmented our work force with the utilization of contract resources to complete layout work which is the drafting and less technical aspect of our work. However, our complex distribution system makes it difficult to out source design work, making it essential that we maintain this expertise in house.

Justification:
In recent years NYC has issued record levels of new permits for new and or renovated buildings. There were 31,902 permits for new units of privately owned housing in 2007, 30,927 in 2006 and 31,599 in 2005 for New York City. Over the three year period, this significant increase in permit/construction activity has resulted in a 7% increase in our service ruling activity. During this time, our engineering resources have remained relatively constant. Increased work volumes, have directly impacted our ability to evaluate, design and develop construction documents for the larger major projects in a timely manner.

In order to ensure a high level of customer satisfaction, it is important that these more complex designs are completed and communicated timely to our customer, to enable them adequate time to plan and incorporate the Company's service needs into their building design. Additionally, many of these larger projects progress on a accelerated construction schedule and any delays on our part severely impact the customer's schedule. Timely communicating the Company's service requirements avoids a customer from incurring costly building redesigns and construction delays.

Given these work volume increases and the significance of providing customers' information timely on large projects, the need to increase our Engineering staff by 12 is paramount. This

increase in resources will provide adequate staffing levels to achieve the customer focus expected at all levels necessary to meet their business needs and expectations.

Estimated Completion Date:

Status:

Funding ($000) **Net O&M Allocation**

Historical Year (2007)	Forecast RYE 2010	Forecast RYE 2011	Forecast RYE 2012	Forecast Total
-	226	226	226	678

Electric Operations - 2009 Operations & Maintenance (O&M)

Project/Program Title	Smart Electric Technologies
Status	
Estimated Service Date	March 2011

Work Description:
Pilot programs will be developed to provide information needed to design initiatives that will be accepted by CECONY customers while supporting demand side management objectives of peak load reduction, energy efficiency and off-peak load building. By bringing clean energy efficient electric technologies to market as a replacement for existing fossil based fuels these initiatives will have the additional benefit of reducing the region's overall carbon footprint. The initial programs will include electric heating, commercial refrigeration, water treatment, and plug-in hybrid electric vehicles (PHEV).

Justification:
The objective of a Smart Electric Technologies program is to promote the use of energy efficient and environmentally friendly electro-technologies as well as maximize the value of the assets and investments in the distribution system by improving its load factor. In addition, these technologies directly support the regional carbon reduction goals.

Pilot programs will allow CECONY to determine its role and the methodologies needed to influence customers to accept innovative end-use technologies. Pilots such as electric heating, commercial refrigeration, water treatment and PHEV will provide information needed to design initiatives that are effective while bringing clean energy, efficient electric technologies to market as a replacement for existing fossil based fuels.

Electric Heating
Advanced electric heating technologies (resistive, air source, water source, geo thermal heat pumps combined with advanced technologies) will be directed at new construction/major rehabilitation projects particularly office buildings, condominiums and certain niche and add-on markets such as restaurants, outdoor cafes, waiting areas, bus shelter, train stations, gas stations, building entrances, loading docks etc. In addition, geo-thermal heat pumps are beginning to take root in the 1-4 family home market where 1,000 to 2,000 homes adopt this new technology each year under a focused marketing effort. We will continue to monitor the advancements of cold climate heat pumps to determine its applicability for the CECONY residential heating market. If proven acceptable cold climate heat pumps, when used in conjunction with air conditioning, have the added benefit of reducing peak electric load. As a replacement for fossil fuels this initiative can be a significant contributor towards carbon reduction goals.

Commercial Refrigeration
The growth of refrigerated foods including fruits, vegetables, frozen and prepared foods, has increased the need for cold storage applications. The need for additional refrigerated warehousing in key areas of the service territory would be a boom for the local economy, spur job development, land development and energy usage. Areas in and around the Hunts Point Market, the local airports, transportation terminals, waterfront docks etc. should be evaluated for new refrigerated warehousing space. Building community site developers, economic development advocates and the International Association of Refrigerated Warehouses would be assembled to further evaluate and assess new facility development. This initiative will have the added benefit of improving the environment (air and noise) by reducing the overall number of long-haul trailers from out-of-state.

Water, Waste Water & Cooling Tower Ozonation
Proven electro-technologies have been identified that could replace chemical water treatment systems with ozonation wastewater treatment systems, and ozonation water treatment systems (including cooling tower ozonation). These systems would target the entire water treatment industry and seek to replace chemical water treatment systems. This environmentally friendly technology has the additional benefit of improving CECONY's load factor by increasing off-peak usage.

Plug-in Hybrid Electric Vehicle
The use of fossil fuel vehicles contribute to the production of harmful green house gases and continued dependency upon imported oil. The goal of a pilot program would be to demonstrate PHEV in New York City and Westchester County. This program will build upon the experience obtained in the Sprinter Van demonstration program currently underway with NYPA. The initial focus will be commercial fleets because of their predictable range and off-peak charging requirements. The commercialization of viable PHEV technology could lead to wide spread use in CECONY's service territory. Benefits include carbon footprint reductions and improvement of system load factor by increasing off-peak usage.

Estimated Completion Date:
03/2011

Funding ($000)

Historical Year (2007)	Forecast RYE 2010	Forecast RYE 2011	Forecast RYE 2012	Forecast Total
-	592	592	592	1,776

2009 Operations & Maintenance (O&M)

Project/Program Title	500 MW Energy Efficiency Monitoring & Verification
Status	Underdevelopment
Estimated Service Date	4/1/09

Work Description:
The Monitoring and Verification (M&V) program is being established to ascertain the demand reductions that we achieve under our 500 MW program proposed in the rate case. This 500 MW program supports the kWh reduction goals as outlined in the State's 15x15 as addressed in the Energy Efficiency Portfolio Standards Proceedings presently being held by the PSC. The basis for this M&V process is pre- and post-installation inspections as well as other rigorous protocols to verify the appropriateness of the DSM measures being installed. These inspections are used to confirm information regarding the existing equipment to be replaced as well as to confirm that the eligible DSM measures were installed. The inspections are also used to determine the actual count of the measures installed.

Justification:
Such verifiable data is critical to the development of utility's long range plans, customer confirmation of DSM impacts and assurances, to ensure that we meet any established regulatory goals and can achieve accompanying incentives and avoid penalties.

Estimated Completion Date:
Program begins on 4/1/09 or earlier if Energy Efficiency Portfolio Standards Proceedings being held by the PSC (which began in 2007) orders implementation prior to the rate case conclusion.
Status:
Program development is underway with the EEPS hearings tentatively issuing a recommendation in May or June 2008.

Funding ($000)

Historical Year (2007)	Forecast RYE 2010	Forecast RYE 2011	Forecast RYE 2012	Forecast Total
0	292	384	476	1152

Electric Operations - 2009 Operations & Maintenance (O&M)

Project/Program Title	500 MW DSM Market Research Support
Status	Ongoing
Estimated Service Date	

Work Description:
Conduct large-scale customer surveys to support energy efficiency, demand response, market segmentation, technology assessment, load shedding, market-sizing and channel development. These studies involve interviewing customers and collecting customer data using internal systems. Studies often require substantial sampling requirements, as well as a variety of interviewing methodologies including mail, internet, telephone and in-person interviewing.

Market Research requires the acquisition of software products and external databases. These purchases include LotInfo, First American Real Estate, MapInfo, MapExtreme, Streetpro, Salesforce and Guideline.

Justification:
Data is essential for assessing and evaluating contingencies, determining preparedness, new customer contact, evaluating customer trends and requirements. These research programs will provide data necessary to fully assess and prioritize load shedding potentials and demand side management resources which is needed during emergencies and contingencies, and will enhance power restoration efforts and emergency planning.

Software and databases are critical for department-wide data gathering and data assessment requirements.

Estimated Completion Date:
Ongoing

Status:
On-going.

Funding ($000)

Historical Year (2007)	Forecast RYE 2010	Forecast RYE 2011	Forecast RYE 2012	Forecast Total
450	400	400	400	1,200

Electric Operations - 2009 Operations & Maintenance (O&M)

Project/Program Title	500 MW Energy Efficiency (DSM) Program Administration
Status	Under development
Estimated Service Date	4/1/09

Work Description:
While Project staffing is divided among three areas: 1)Program Administration 2) M&V and 3) Staffing attributable to program costs, only administration costs and M&V costs are being considered a rate base cost while the remaining program costs are proposed to be recovered through the MAC or SBC. Program administration staffing is envisioned to be though internal hires while the M&V field force (described in a separate white paper) will be through external contracted labor (as is the case now with the Targeted DSM Program). As the program matures some of the external hiring may revert to internal hiring.
The main functions associated with program administration are contract administration, IT support, reporting and HR functions, organization management, sales administration and channel management, and M&V administration.

Justification:
The administration supports the 500 MW program as submitted in the rate case which includes support for programs and kWh goals allocated under the EEPS hearings by the PSC and our Targeted DSM which is used for T&D capital deferral.

Estimated Completion Date:
Program begins on 4/1/09 or earlier if Energy Efficiency Standards Proceedings being held by the PSC (which began in 2007) orders it prior to the rate case conclusion.

Status:
Program development is underway with the EEPS hearings tentatively issuing a recommendation in May 2008.

Funding ($000):

Historical Year (2007)	Forecast RYE 2010	Forecast RYE 2011	Forecast RYE 2012	Forecast Total
0	920	1748	2760	5428

Electric Operations - 2009 Operations & Maintenance (O&M)

Project/Program Title	500 MW Energy Efficiency (DSM) Training
Status	New
Estimated Service Date	**N/A**

Work Description:
This program will be used to support the on-going Energy Efficiency training of new and existing Con Edison Energy Efficiency and Demand Response personnel.

Justification:
As Con Edison re-establishes itself as a leader in the administration of Energy Efficiency programs in its service territory, there is an increased need to have a highly trained workforce available for this effort. Existing personnel will need to be kept up-to-date on state-of-the-art Energy Efficiency technologies and programs. New personnel will require training in the fundamentals of Energy Efficiency so as to quickly contribute to the effort in an effective manner. Training will be in the form of on-site sessions facilitated by expert consultants in the Energy Efficiency field. This training will be supplemented by attending pertinent conferences, workshops and seminars that may be held in various parts of the country.

Estimated Completion Date:
This is an annual endeavor.

Status:
New

Funding ($000)

Historical Year (2007)	Forecast RYE 2010	Forecast RYE 2011	Forecast RYE 2012	Forecast Total
0	$200	$200	$200	$600

Electric Operations - 2009 Operations & Maintenance (O&M)

Project/Program Title	500 MW Energy Efficiency (DSM) Website Development
Status	On going
Estimated Service Date	2009

Work Description:
The DSM Website development project will support of the Company's 500MW plan which includes the EEPS allocation while enhancing the company's capability to attract customers to the demand side management section through visually appealing design and engaging subject matter; increase awareness of demand side management; while enabling customers to participate in these programs by enrolling online.

Justification:
The CECONY Website continues to be a premiere resource for the general public and CECONY customers. Due to an increase in public, customer and media interest in energy efficiency and demand response programs, we anticipate an increase in Website activity in these areas. This Energy Efficiency Website development project will increase our ability to use the Internet as an educational, marketing and implementation tool. The Website will educate visitors and allow customers opportunities to easily participate in energy efficiency and demand response programs.

Estimated Completion Date:
The first phase of the Energy Efficiency Website development will be completed in 2009. Enhancements and improvements will continue annually for the three years of the rate plan.

Status:
Electric energy efficiency program information on the company's Website is currently limited to demand response programs. This project will develop a comprehensive energy efficiency programs component to the site. This site will be used to increase program understanding, educational opportunities and be used as a marketing tool to simplify participation and understanding of energy efficiency as a whole.

In 2008, Con Edison's has worked to enhance participants' experience with Demand Response through content revisions and by offering online applications to streamline the application process and expedite program enrollment. This Web-based project will also allow existing program participants to view and update their enrollment information, and apply to additional demand response programs.

Funding ($000)

Historical Year (2007)	Forecast RYE 2010	Forecast RYE 2011	Forecast RYE 2012	Forecast Total
0	200	200	200	600

Electric Operations - 2009 Operations & Maintenance (O&M)

Project/Program Title	Commercial Service Representative Automation
Status	
Estimated Service Date	2009

Work Description:
Energy Services and Information Resources are modernizing the entire workflow in Energy Services, involving clerical, Commercial Service Representatives and Customer Project Managers. This project is designed to improve communication with the customer in order to maintain and improve 'customer relationship'.

The outcome of this effort will be:

1. Improved Customer Service through:
    a. Automated Contractor and Customer communications.
    b. Automated telephone answering solutions, giving updates and scheduling
    c. Real time service date scheduling, rescheduling and notifications.
2. Improved Productivity through:
    a. Wireless field system
    b. Automated letters
    c. Real time scheduling
    d. Automated data entry
    e. Checklist field inspections
    f. GPS field sheets
    g. Digital files

Currently these activities are done manually or not at all. Even those activities that are done manually often do not reach the desired or mandated level of communication with the customer. The manual process and reliance on voice communications are inefficient and the allocation of resources to the priority work is not as effective as it needs to be.

Components of the System

1. ***Automated Telephone System*** [IVR]
   The system will extract the answer to the customers question from the CORS Web system and E-Trac. This will significantly reduce voice mail and allow the customer to get real-time information on the status of their job.
2. ***Commercial Operations Reporting System (CORS***:
   Commercial Operations Reporting System (CORS) is the IMS system that tracks, controls and reports on Energy Services work. That system, developed 20+ years ago is voluminous and antiquated. It will be replaced with a new web based Project Management System to allow communication with E-Trac and other company systems.
   a. Field Computer
   Representatives will shift their work from predominantly office to field. All job folders will be digital, allowing them to start and/or quit in the field. Integration with E-Trac, Cors and the Service Date systems will allow them to release work and communicate with the customer and contractor instantaneously. Field results will be automatically annotated.
   b. Service Date System:
   Customers are most dissatisfied with us when they are not given a service date or when a service date is cancelled. This system will allow a representative, while in the field, to pick a service date for a job. That date will be automatically communicated to the operating group, the customer and the contractor. Any

changes, due to emergencies, will result in an automatic rescheduling, with automated notification to Energy Services, the customer and the contractor.

Estimated Cost & Schedule

The Energy Service M&A System involves an initial capital cost of $2,286,200 and an annual maintenance of $210,600. The improvement in customer service and satisfaction is priceless. An additional capital cost of $400,000 and additional annual O&M cost of $52,000 is anticipated in 2009 to add the CPMs to the program.

Justification:

Customer Advantage

- Presently the CSR is in the field or doing paperwork [unavailable to answer calls] 70% of the day. With the new system the customer will get one call answers 100% of the time, rather than leaving callback messages.
- The proactive calls will keep the customer alert to the progress and potential deficiencies of their contractor.
- With the planned replacement of the CORS system, the customer will know when their job will be done, will be called if the schedule changes and will be connected to the proper operating group if the scheduled crew does not arrive.

Contractor Advantage

- Same as Customer, except the Contractor will have the added advantage of getting information on each of his jobs using his license number.
- The contractor, when ready, with all the necessary requirements satisfied, will be able to schedule and inspection appointment automatically.

CSR Advantage

- The CSR will devote the 35% of his time currently spent on the phone toward field inspections and releasing work.
- With the new Project Management System the CSR will be free to devote more time to field work.
- The calls the CSR gets will be routed directly to his cell phone. Screened he knows they are important calls.
- Having the Customer and Contractor know the status of their job and what is needed to move forward will improve efficiency and Customer relations, without tying up human resources.

Estimated Completion Date:

2009

Status:

Funding ($000)

Historical Year (2007)	Forecast RYE 2010	Forecast RYE 2011	Forecast RYE 2012	Forecast Total
0	275	275	275	825

CONSOLIDATED EDISON COMPANY OF NEW YORK, INC.
CAPITAL AND O&M
SYSTEM AND COMPONENT PERFORMANCE
SUBSTATION OPERATIONS

DESCRIPTION	Page #
Reference Substation Operations - Capital - IIP- 2	
Equipment	
Elmsford-Install New Substation (need 138kV Bus Revamp)	3
Corona - Install Additional 138kV Breakers	4
Condition Based Monitoring Equipment	5
Obsolete 138kV Circuit Breaker Program	7
Replace 345kV Circuit Breaker Other Than ATB	7
Obsolete Circuit Switcher Replacement	12
Replace Disconnect Switches	13
Replace Obsolete Transformers	16
Replace Overdutied 13/27kV Circuit Breaker Programs	17
Failed Transformer Program	19
Rainey-Replace Temp Transformer With Permanent	21
Failed Equipment Other Than Transformers	22
RELAY	
Control Cable Upgrade Program	23
Relay Modifications	24
Upgrade Analog Circuits To Digital Fiber	27
MISCELLANEOUS COMPONENTS	
Additional G&T Devices	28
Area Substation Reliability And Auto Ground Circuit Switchers	29
Battery & Rectifier Replacement	30
Capacitor Cable Upgrade Program	33
Category Alarms	34
Construct Relay Enclosure Houses	36
Corona Settlement	37
Diesels / Blackstart Restoration (Phase 2) - Upgrade Station L&P	39
East River Complex - Install Wall	40
Facility Improvement Program	41
Fire Pump Test Header Installation	44
High Voltage Test Sets	45
New Maximo Upgrade	47
Rapid Restore Enhancements- Mapping/Modeling System	48
Reinforced Ground Grid	49
Revenue Metering Upgrade	50
Roof Replacement Program	52
Small Capital Equipment Program	53
SOCCS - RTU Replacement	56
Substation Automation Target Information System	57
East River-Protection System Upgrade	58
Buchanan-Substation Continuance	59
E179th Street-Substation Continuance	60
E 63rd Street-Substation Continuance	61

CONSOLIDATED EDISON COMPANY OF NEW YORK, INC.
CAPITAL AND O&M
SYSTEM AND COMPONENT PERFORMANCE
SUBSTATION OPERATIONS

DESCRIPTION	Page #
White Plains-Substation Continuance	62
Parkchester-Substation Continuance	63
Substation Loss Contingency	64
Switchgear Enclosure Upgrade Program	66
Technology Improvements	67
Security Enhancements	68
Reference Substation Operations - O&M - IIP-3	
Bus Enclosure	70
Corrective Maintenance Normalization	71
Dynamic Feeder Rating System	72
Field Operation Trainers	73
Operator Staffing Augmentation For Existing Facilities	74
Structural Integrity / Station Betterment	76

Substation Operations – 2009 Capital

Project/Program Title	Elmsford – Install New Switchgear
Status	Engineering & Planning
Estimated Service Date	May 2011

Work Description:
This project will enhance the reliability of the Elmsford Substation. Modern switchgear controlled by state-of-the art relay protection will be installed in a new building that will also provide space for a new control room, new battery rooms, new communications room and new relay rooms.

Justification:
The Elmsford substation, located in Westchester County, is over 49 years old and nearing the end of its useful life. The existing substation consists of 4 transformers, 8 sections of switchgear and 3-20 MVAR capacitor banks. The switchgear utilizes obsolete circuit breakers. The equipment enclosures have deteriorated resulting in leaks and equipment outages due to water damage. The equipment supporting structures are corroding and switchgear components have also been susceptible to water damage. As the structural components age, manual operation of the old heavy circuit breakers has become increasingly difficult and requires more time and resources. This project will vastly improve the feeder processing durations of the Elmsford electric distribution system.

Estimated Completion Date:
Completion of this project is scheduled for May 2011.

Status:
The design option for the upgrades to the Elmsford Substation has been selected and design of the station upgrades will commence during the second quarter of 2008. In parallel, a new Storm Water Pollution Prevention Plan (SWPPP) will be developed and the permitting process with the Village of Elmsford will begin. The permitting process with the Village of Elmsford will likely take 6-9 months to complete.

Funding ($000):

Forecast 2009	Forecast 2010	Forecast 2011	Forecast 2012	Forecast Total 2009-2012
37,000	36,000	8,000	750	81,750

Substation Operations – 2009 Capital

Project/Program Title	Corona –Install Additional 138kV Breakers
Status	Planning
Estimated Service Date	2010

Work Description:
Install two new 138 kV Breakers No. 6S and 8X in the existing ring buses at Corona Switching Station. This will eliminate the contingencies caused by the failure of either Breaker 8N or Breaker BT each of which would remove two transformers from service during fault clearing.

Justification:
The failure of 138 kV Breaker No. 8N at the Corona 138 kV station will result in a simultaneous loss of Transformer No. 4 at Corona No. 1 substation and Transformer No. 6 at Corona No. 2 substation. Also, the failure of 138 kV Bus Tie Breaker BT will result in the simultaneous loss of Transformer No. 1 at Corona No. 1 and Transformer No. 6 at Corona No. 2. Due to load considerations, the stand-by bank No.5 will be switched to Corona No.2 , and then operate Corona No. 1 based on three hour rating of the 3 transformers of 399 MW.

The 399 MW capability assumes that, following a breaker failure, the faulted equipment will be identified and one of the two transformers will be restored to service within 3 hours. This may not be realistic under all operating conditions. The installation of the new circuit breakers will assure that a breaker failure scenario loss of two transformers will not occur, and thus will increase the reliability of both Corona No.1 and Corona No. 2 Area Substations.

Estimated Completion Date:
The projected completion date for this project is 2010.

Status:
Planning stage

Funding ($000)

Forecast 2009	Forecast 2010	Forecast 2011	Forecast 2012	Forecast Total 2009-2012
-	5,000	-	-	5,000

Substation Operations – 2009 Capital

Project /Program Title	Various - Condition Based Monitoring Equipment
Status	Construction
Estimated Service Date	On-going

Work Description:
This purpose of this program is to install condition based monitoring equipment on power transformers with load tap changer equipment, transformers at two-bank area substations, and other locations where their installation has been determined to be appropriate. The equipment included in the program will be Load Tap Changer (LTC) monitoring equipment as well as on-line dissolved gas-in-oil analyzers (DGOA) units. The installations will be prioritized based on lessons learned through past experience as to where monitoring has been found to be most effective.

Justification:

The load tap changer is used to dynamically maintain the secondary voltage of the transformer due to load variation and changing system voltage conditions. By monitoring key parameters of the load tap changer, problems can be identified prior to equipment malfunction, thus avoiding system impacts.

To date, LTC condition monitoring equipment has been installed on over 300 transformers. These installations have been determined to be responsible for successfully predicting 26 potential transformer failures resulting in savings in avoided replacements and outage time.

Continuous monitoring can identify abnormal conditions and predict deterioration of components prior to failure. We have been able to remove the equipment from service to perform maintenance and parts replacement prior to performance deterioration or failure. Installation of the monitoring equipment on additional transformers is required to further enhance the reliability for all transformer installations.

On existing units, communication problems are being encountered due to noise on the telephone lines and electronic equipment failures. The replacement communication equipment will use an Ethernet communications path as opposed to analog dial-up connections. Fiber optic cables will be installed to each transformer from the substation LAN room thus tying the communications into the corporate network. In addition, some of the electronic equipment is obsolete and replacement parts are not available from the original equipment manufacturer. Obsolete equipment will be replaced with modern on-line monitoring equipment including on-line gas-in-oil monitors. Gas-in-oil has been found to be one of the most effective methods for identifying insipient failures. In 2007, periodic gas-in-oil sampling identified 9 transformers with internal problems that were addressed prior to failure.

This system enhancement program will improve our ability to closely monitor the condition of our critical power transformers and hence better schedule our maintenance activities.

Likewise, the installation of on-line gas monitoring of transformers will provide continuous monitoring on the condition of the transformers and will allow operating personnel to make informed decisions regarding transformer maintenance and allow for the scheduling of outages.

Estimated Completion Date:
This is an on-going program. Monitoring equipment is installed and upgraded based on lessons learned through past experience and in response to changes and improvements in technology.

Substation Operations – 2009 Capital

Status:
In 2007, we continued the upgrade of communications and the network data historian hardware for installed LTC condition monitoring equipment. We also installed an on-line DGOA unit on East 13th St. Substation Transformer #10 and purchased 3 DGOA units for installation in 2008.

For 2008, the project scope will include installation of 3 to 6 DGOA units on targeted transformers.

Upgrade of communications and network systems for the installed LTC condition monitoring equipment will continue in 2008 including upgrades to the servers and software used for on-line condition reporting.

Funding ($000):

Forecast 2009	Forecast 2010	Forecast 2011	Forecast 2012	Forecast Total 2009-2012
250	250	250	250	1,000

Substation Operations – 2009 Capital

Program Title	Replace Obsolete 345kV & 138kV Circuit Breakers
Status	On-Going
Estimated Service Date	On-Going

The obsolete 345kV and 138kV circuit breaker replacement programs have been merged into one program described below.

Work Description:
There are presently 425 345kV and 138kV circuit breakers included in this program. The scope of work includes the replacement or capital overhaul of these breakers when they come due for maintenance according to their Engineering approved maintenance schedule. Replacement is performed when a breaker or breaker type is deemed obsolete due to progressive deterioration, lack of spare parts, high maintenance costs, oil and/or gas leakage and poor performance history. Replacement is also performed when determined to be more economical than overhaul, a decision that also results in enhanced reliability. The 345kV GE type ATB breaker is a breaker type that has been deemed obsolete and replacement of all of these breakers is expected to be completed by the end of 2008. Westinghouse 1380SF6 and Westinghouse CASP45 are families of 138kV breakers with a considerable population that have reached the end of their life cycle and have been targeted for replacement. The replacement of assorted oil-filled breakers provides similar benefits. This program is funded to replace or overhaul approximately 30 breakers a year.

Justification:
This program is a significant driver in the reduction of operation and maintenance costs, SF6 emissions, and forced outages. The replacement of deteriorated or problematic circuit breakers provides system enhancement and is cost effective versus frequent repairs. In addition, this program will reduce future maintenance costs such as special custom fabrication of unavailable replacement parts and expensive SF6 gas replenishment.

Estimated Completion Date:
This program is on-going. Breakers are overhauled according to their maintenance schedule or replaced as performance and maintenance history dictate.

Status:
The following work was completed in 2007:
345kV: 9 replacements 7 overhauls
138kV: 13 replacements

For 2008, the following work is being planned. Completion of this work is dependent on outage availability:
345kV: 4 replacements 10 overhauls
138kV: 20 replacements 2 overhauls

The scope of work for 2009 – 2012 will be determined based on the maintenance schedule of the breakers, breaker performance, and outage availability.

See below for a detailed list of the work completed in 2007, the candidate projects being planned for 2008, and candidate breakers coming due for maintenance between the years 2009 - 2011.

Substation Operations – 2009 Capital

138 kV Funding ($000):

Forecast 2009	Forecast 2010	Forecast 2011	Forecast 2012	Forecast Total 2009 - 2012
$11,700	$11,700	$11,700	$11,700	$46,800

345 kV Funding ($000)

Forecast 2009	Forecast 2010	Forecast 2011	Forecast 2012	Forecast Total 2009 - 2012
$8,000	$8,000	$8,000	$8,000	$32,000

2007 Completed Work

345 kV Breaker Replacements					
Station	**Breaker**	**Start Date**	**End Date**	**Manufacturer**	**Model**
Goethals	2N	1/15	2/18	GE	ATB
Farragut	8W	2/5	3/17	GE	ATB
Rainey	7W	2/10	3/16	GE	ATB
Gowanus	14	9/24	10/28	ITE	MODA
Sprain Brook	RN5	9/26	10/26	GE	ATB
Millwood	14	10/20	11/21	GE	ATB
Farragut	10E	11/27	12/29	GE	ATB
Fresh Kills	5	11/12	12/21	GE	ATB
Rainey	8E	12/4	1/7	GE	ATB
345 kV Breaker Overhauls					
East Fishkill	3	3/19	4/6	Delle Alsthrom	FX22D
Millwood	4	4/9	4/27	Cogenel	PK4C
Ladentown	6-56-2	9/17	10/13	Cogenel	PK4C
Ladentown	4-56-2	10/29	11/21	Cogenel	PK4C
Farragut	10W	9/24	10/14	Delle Alsthrom	FX22D
W49th St.	6	10/23	11/9	ITE	MODC
East Fishkill	5	11/12	12/1	Delle Alsthrom	FX22D
138 kV Breaker Replacements					
E179th	BTE	12/8	1/12	Merlin Gerin	FA2
E179th	BTW	12/8	1/12	Merlin Gerin	FA2
Freshkills	BT1-4	2/24	3/30	Westinghouse	1380
Jamaica	8	3/12	4/29	Westinghouse	1380
Queensbridge	2E	3/26	5/2	Westinghouse	1380
Queensbridge	3E	3/26	4/27	Westinghouse	CASP
Sprain Brook	N7	4/20	5/5	Westinghouse	SFV
Vernon	4W	9/27	11/1	Westinghouse	1380
Vernon	5W	9/27	11/4	Westinghouse	CASP
Jamaica	7	9/27	11/21	Westinghouse	CASP
Queensbridge	4E	11/5	12/10	Westinghouse	CASP
Queensbridge	5E	11/5	12/10	Westinghouse	CASP
Vernon	2E	12/4	1/7	Westinghouse	1380

Substation Operations – 2009 Capital

2008 Candidate Project List: the equipment listed is subject to change based on system conditions.

345 kV Breaker Replacements			
Station	**Breaker**	**Manufacturer**	**Model**
Fresh Kills	1	GE	ATB
Farragut	6E	GE	ATB
Farragut	2W	GE	ATB
Ramapo	T-1500-W-72-2	GE	ATB
345 kV Breaker Overhauls			
Ladentown	1-56-2	Cogenel	PK4C
Goethals	8	Delle Alsthrom	FX22D
Dunwoodie	8	ITE	SF6
Dunwoodie	6	ITE	SF6
W49th St.	2	ITE	SF6
Sprain Brook	RS5	Cogenel	PK4C
Ramapo	W-72-2Y	Delle Alsthrom	FX22D
Farragut	11W	Westinghouse	SFA
Pl. Valley	RNS5	Westinghouse	SFA
Pl. Valley	RN5	Westinghouse	SFA
138 kV Breaker Replacements			
Queensbridge	14E	Westinghouse	CASP
Jamaica	13	Westinghouse	1380
Dunwoodie	9AN	Westinghouse	1380
Vernon	7W	Westinghouse	1380
Sprain Brook	S6	Merlin Gerin	PPTY
Jamaica	14	Westinghouse	1380
Vernon	8W	Westinghouse	1380
Astoria West	1S	Westinghouse	CASP
Queensbridge	1E	Westinghouse	1380
Fresh Kills	BT1-3	Westinghouse	CASP
E13th St	F10	Westinghouse	1380
E75th St.	200	Westinghouse	SF6
Fresh Kills	BT1-2	Westinghouse	CASP
Queensbridge	6E	Westinghouse	CASP
Hudson Ave East	10	Westinghouse	CASP
Vernon	7E	Westinghouse	1380
Queensbridge	9E	Westinghouse	CASP
Astoria West	1N	Westinghouse	CASP
Astoria West	2N	Westinghouse	CASP
Queensbridge	7E	Westinghouse	CASP
138 kV Breaker Overhauls			
Fresh Kills	BT1-7	ITE	SF6
Fresh Kills	BT1-8	ITE	145PM

Substation Operations – 2009 Capital

Candidate Breakers Due for Maintenance 2009 – 2011:
This is the list of 138kV and 345kV breakers that come due for maintenance during this time period. Other breakers will also be considered for replacement or overhaul during this time period based on performance.

Breaker	Voltage	Manufacturer	Model
Fresh Kills TA-1	138	Westinghouse	1380SF6
Jamaica 4	138	Westinghouse	CASP45
Corona 4S	138	MG	FA2
Astoria West 10N	138	MG	FA2
Fresh Kills BT1-1	138	Westinghouse	CASP45
E13th St. BT 5-4	138	Westinghouse	1380SF6
Millwood 8	345	Cogenel	PK4C
E179th St. 4W	138	MG	FA2
Millwood 12	345	Cogenel	PK4C
Queensbridge 10E	138	Westinghouse	CASP45
Queensbridge 11E	138	Westinghouse	CASP45
E179th St. 2E	138	MG	FA2
Goethals 6	345	Delle Alsthrom	FX-22D
Millwood 6	345	Cogenel	PK4C
W49th St. 7	345	ITE	MODC
E179th St. 6E	138	MG	FA2
W49th St. 4	345	ITE	MODC
E13th St. T 8	138	ABB	145 SF/P
Sprainbrook RNS6	345	Westinghouse	362SFA
Farragut 6W	345	MG	GFA2
E13th St. T 3	138	ABB	145 SF/P
Farragut 9W	345	Westinghouse	362SFA
Sherman Creek BT	138	MG	FA2
Farragut 3E	345	Westinghouse	362SFA
Sprainbrook RN6	345	Westinghouse	362SFA
E179th St. 4E	138	MG	FA2
Astoria West 8N	138	Westinghouse	CASP45
Millwood 11	345	Cogenel	PK4C
Farragut 9E	345	Westinghouse	362SFA
Millwood 10	345	Cogenel	PK4C
E13th St. F 3	138	ABB	145 SF/P
Ramapo 69-2Y	345	Delle Alsthrom	FX-22D
Ramapo 70-2Y	345	Cogenel	PK4C
E13th St. T 5	138	ABB	145 SF/P
Ramapo 77-2X	345	Delle Alsthrom	FX-22D
Farragut 7E	345	MG	GFA2
Fresh Kills BT1-9	138	MG	FA2
Ramapo T-2500-69-2	345	Delle Alsthrom	FX-22D
E13th St. T 9	138	ABB	145 SF/P
Ramapo 94-2Y	345	Delle Alsthrom	FX-22D
E13th St. F10	138	Westinghouse	1380SF6
Pleasant Valley RS5	345	Westinghouse	362SFA

Substation Operations – 2009 Capital

Breaker	Voltage	Manufacturer	Model
Queensbridge 7E	138	Westinghouse	CASP45
E13th St. BT 3-2	138	ABB	145 SF/P
Dunwoodie 4	345	ITE	MODC
Sprainbrook RS6A	345	Cogenel	FXT15
Farragut 11E	345	Westinghouse	362SFA
Vernon 7W	138	Westinghouse	1380SF6
W49th St. BTN	345	ITE	MODC
E13th St.T 1	138	ABB	145 SF/P
W49th St. 3	345	ITE	MODC
E13th St. T 2	138	ABB	145 SF/P
W49th St. 1	345	ITE	MODC
W49th St. BTS	345	ITE	MODC
E13th St. T 6	138	ABB	145 SF/P
E13th St.T 7	138	ABB	145 SF/P
East Fishkill 11	345	MG	GFA2
Ramapo T-70-2	345	DE	PK4C
Greenwood 4N	138	ABB	145 SF/P
Vernon 9W	138	ABB	145 SF/P
E179th St. 6W	138	ABB	145 SF/P
E179th St. 7W	138	ABB	145 SF/P
E13th St. F 2	138	ABB	145 SF/P
Greenwood 2N	138	ABB	145 SF/P
E13th St.T 4	138	ABB	145 SF/P
Vernon 9E	138	Westinghouse	1380SF6
Vernon 4E	138	Westinghouse	1380SF6

Substation Operations – 2009 Capital

Project/Program Title	Obsolete Circuit Switcher Replacement Program
Status	On-going
Estimated Service Date	On-going

Work Description:
We have identified 6 obsolete circuit switchers on our system. The S&C Mark 2 and the S&C type G are no longer supported by the manufacturer with parts or service. This program will replace one (1) obsolete circuit switcher per year.

Justification:
A failure of these switchers would compromise the reliability of its associated equipment. This includes Feeder Y50, which runs between Con Ed and LIPA, Millwood Transformer TA1 and Ramapo Feeder 5018 which is a 500kV tie. It is recommended that the 6 obsolete circuit switchers are replaced with reliable upgraded models from S&C. This will ensure the ability to properly maintain the equipment and their continued reliability.

This is an initiative to improve system reliability by targeting replacement of older vintage obsolete circuit switchers.

Estimated Completion Date:
This is an on-going program. As the program progresses, other switchers will be considered for replacement based on age, reliability, and obsolescence issues.

Status:
In 2008, we will replace the circuit switcher associated with Gowanus Substation Reactor 18. In 2009, we plan to replace another circuit switcher in Gowanus. The next likely candidates for replacement will be circuit switchers in Ramapo and Millwood substations.

Funding ($000):

Forecast 2009	Forecast 2010	Forecast 2011	Forecast 2012	Forecast Total 2009-2012
500	500	500	500	2,000

Substation Operations – 2009 Capital

Project/Program Title	Various – Replace Disconnect Switches
Status	On-going
Estimated Service Date	On-going

Work Description:
This is an on-going program to replace or perform a capital overhaul on disconnect switches found to be frequently unreliable, obsolete, and/or approaching the end of their useful life.

Disconnect switches are not replaced or overhauled on a time-based frequency. The entire population is reviewed on a periodic basis by Substation Operations and Engineering and candidate disconnect switches are chosen based on such factors as criticality of application, prior maintenance history, safety concerns, outage availability, and obsolescence.

Justification:
This program enhances the reliability of the system by proactively addressing disconnect switch performance issues on a scheduled basis.
As disconnect switches age and degrade, the probability of malfunction increases. Replacing the units on an emergency basis rather than on a scheduled basis increases the replacement cost and impacts reliability. For obsolete disconnect switches where replacement parts are no longer available or require special custom order with long lead times, the potential for extended repair outages exists.
Due to the large population of disconnect switches, this program has been effective and cost efficient at ensuring disconnect switch reliability as opposed to time-based periodic maintenance/replacement. Funding has been allocated to address growing age and obsolescence issues related to the disconnect switch population identified as part of our periodic reviews.

Estimated Completion Date:
This program is on-going.

Status:
During 2007, forty eight (48) disconnect switches were replaced or overhauled as part of the program.

The disconnect switches to be worked during 2008 and in the future will be selected from the attached disconnect switch candidate list. The list currently contains 103 disconnect switches planned for replacement or overhaul. This candidate list and priority for replacement is revised as a result of on-going evaluations of disconnect switch performance.

Funding ($000):

Forecast 2009	Forecast 2010	Forecast 2011	Forecast 2012	Forecast Total 2009 -2012
4,600	4,600	4,800	4,800	18,800

Substation Operations – 2009 Capital

Disconnect Switch Candidate List

STATION	ID	KV	STATION	ID	KV
HAE	6-3	138	Fox Hills	81SA	33
HAE	6-5	138	Fox Hills	3S2	33
Farr	7E7	345	Fox Hills	3S3	33
Farr	8E8	345	Fox Hills	21SB	33
Greenwood	1N8	138	Fox Hills	21SA	33
Greenwood	2S2	138	Fox Hills	2S2	33
Greenwood	2S1	138	Fox Hills	2S1	33
Greenwood	2N2	138	Fox Hills	12SB	33
Greenwood	6N5	138	Fox Hills	12SA	33
Greenwood	6N6	138	Fox Hills	1S1	33
Greenwood	6S6	138	Fox Hills	1S9	33
Greenwood	7S7	138	Fox Hills	11SB	33
Greenwood	7S7	138	Fox Hills	11SA	33
Greenwood	6S5	138	ER	4412	69
Queensbridge	13E13	138	E13	BT 43-4	138
Queensbridge	14E1	138	E13 345	T10-F	345
Vernon	2E-3	138	179	BTW3	138
Queensbridge	1E-1	138	179	F1W	138
Queensbridge	1E-2	138	179	BTW1	138
Jamaica	13-1	138	179	1W1	138
Vernon	7W-7	138	HG	D5-3	138
Vernon	7W-8	138	HG	D6-3	138
Jamaica	14-1	138	179	TR5	138
Jamaica	14-2	138	179	5E6	138
Vernon	8W-8	138	179	6E6	138
Vernon	8W-1	138	SC	6W5	138
Fox Hills	13F1	33	SC	5W5	138
Fox Hills	4S4	33	SC	BTW4	138
Fox Hills	4S3	33	SC	5W4	138
Fox Hills	41SB	33	SC	BTE4	138
Fox Hills	41SA	33	SC	4E4	138
Fox Hills	42SB	33	SC	5E4	138
Fox Hills	42SA	33	HG	D5-1	138
Fox Hills	51SA	33	HG	D5-2	138
Fox Hills	51SB	33	Ramapo	94-1Y	345
Fox Hills	5S4	33	SB	LTS6	138
Fox Hills	6S5	33	SB	N688	345
Fox Hills	6S6	33	Ramapo	1500-1X	345
Fox Hills	F6	33	Ramapo	W-72-1Y	345
Fox Hills	7S6	33	Ramapo	70-1Y	345
Fox Hills	7S7	33	Dunwoodie	4S14	138

Substation Operations – 2009 Capital

Fox Hills	8S7	33	Dunwoodie	F14S	138
Fox Hills	8S8	33	Dunwoodie	F14SA	138
Fox Hills	82SB	33	Millwood	F7W	138
Fox Hills	82SA	33	Millwood	7W7	138
Fox Hills	9S8	33	Millwood	7W8	138
Fox Hills	9S9	33	Dunwoodie	9N10	138
Fox Hills	71SB	33	Dunwoodie	F10N	138
Fox Hills	71SA	33	Dunwoodie	10N10	138
Fox Hills	81SB	33	Buchanan	BT2-3S	138
			Buchanan	BT2-3N	138
			Dunwoodie	6S6	138
			Dunwoodie	5S6	138

Substation Operations – 2009 Capital

Project/Program Title	Obsolete Transformer Replacement Program
Status	On-going
Estimated Service Date	On-going

Work Description:
The purpose of this program is to replace transformers that have reached the end of their life expectancy and whose parts have become obsolete and no longer available from the original equipment manufacturer. Included in the scope of the transformer replacement is the installation of a moat system for the vault, a new fire protection system, and a transformer condition monitoring system.

Justification:
There are approximately 400 transformers on the system of which approximately 150 of these are over 40 years old. As these units approach the end of their life cycle there is an increase in the amount of corrective maintenance and the probability of malfunction. Replacement parts are special custom order and require long lead times to receive. Proactively replacing problematic obsolete transformers prior to failure is cost effective when compared to emergency replacement, improves the reliability of the system, and provides a process for life renewal of the transformer fleet.

This program is presently funded to allow the replacement of 2 distribution station transformers per year. Funding has been increased in 2010 to also allow the replacement of 1 transmission level transformer per year.

Estimated Completion Date:
This is an on-going program.

Status:
The transformers at three (3) substations are currently being targeted for replacement under this program: West 19th St., Cherry St. and Avenue A. All operate at 69 kV. Since the Company's long-term goal is to retire the 69 kV system, the replacement banks are being purchased with dual high side bushings. On the transmission system, we expect to start replacing one transformer per year in 2010.

W19th St.: Transformers 1, 2, 3, 4 have been replaced. Transformer 5 replacement is in progress and is scheduled to be completed in May 2008.
Cherry St.: Replacement of Transformer 4 will be completed in April 2008. Transformer 3 replacement is scheduled to begin in the fall 2008 and completed in the spring 2009.
Avenue A: Replacement of the transformers will begin in 2009.

Funding ($000)

Forecast 2009	Forecast 2010	Forecast 2011	Forecast 2012	Forecast Total 2009-2012
13,000	21,000	21,000	21,000	76,000

Substation Operations – 2009 Capital

Project /Program Title	Replace Overdutied 27 kV & 13 kV Circuit Breakers
Status	In-Progress / Engineering
Estimated Service Date	On-going

Work Description:
This program provides funding to replace a number of existing 13 & 27 kV circuit breakers installed in our substations that currently are not rated to be able to interrupt maximum fault currents under worst-case scenario fault conditions. Circuit breakers will be replaced where the maximum fault current could, under a worst-case fault scenario, exceed their rating.

Justification:
Based on 2005 study analysis, performed by the Company and verified by an independent consultant (ABB), fault currents exceed breaker interrupting capability at 35 area substations. This worst-case scenario is based on all the equipment in the station being on line, a failure occurring across all three phases at or near the station switchgear, and perfect conductivity between the phases at the failure point. Despite the unlikelihood of all these factors occurring simultaneously, we take the extra precaution of physically isolating the three phases within the station to further reduce the probability of such an event.

A long-term system enhancement program was established to replace and/or upgrade all of these 13 and 27 kV circuit breakers. Under this program, the first priority was given to the stations where the potential over-duty is 10 percent or greater. The second priority was given to the substations where the potential over-duty is between 3 and 10 percent. Finally, the substations with less than 3% potential over-duty would be addressed as the third priority.

Estimated Completion Date:
The current program is funded to replace, minimally, 60 breakers per year. Based on the current estimates, this program will extend beyond the next 10 years. Note that the schedule is subject to change based on outage availability and other factors. Retrofit outages typically require distribution bus section outages, which must be closely coordinated with other high priority work on the distribution feeders. This can have a fairly substantial impact on the level of program activity in any given work period.

It should also be noted that Con Edison is currently undertaking an R&D project with EPRI to develop a fault limiting device that would eliminate the need to replace breakers. Successful development of a suitable device could significantly impact this program.

Status:
During the latest reporting period for this program (4/1/07-4/1/08) , a total of 63 breakers were completed:

13 kV Breakers – A total of 42 breakers were completed.
West 65th St Substation - 16 breakers were completed. The breakers completed were:
81S, 82S, 83S, 84S, 71S, 72S, 73S, 74S, 61N, 62N, 63N, 64N, 6BT, 61S, 62S, and 63S.
Washington St Substation - The station has been completed. 20 breakers were completed. The breakers completed were: 11N, 12N, 13N, 11S, 12S, 13S, 1TR, 1SY, LP2, 61N,62N,63N,64N, 61S,62S,63S,6BT, 3SY, C1, C2. This station is now fully retrofitted.
East 75th St Substation – 6 breakers were completed. The breakers completed were: 31E, 32E, 33E, 34E, T3E, and S3E

Substation Operations – 2009 Capital

27 kV Breakers – A total of 21 breakers were completed.
North Queens Substation – 3 breakers were completed. The following breakers were completed in 2007: MBSB 101, MBSB 302, and 35W
Greenwood Substation – 5 breakers were completed. The following breakers were completed in 2007: 110, TR1, BT440, TR2, and BT220.
Jamaica Substation – 7 breakers were completed. The following breakers were completed in 2007: 42W, 42E, 43E, 43W, 22E, 22W, and 23E.
Bensonhurst Substation – 6 breakers were completed. The following breakers were completed in 2007: 11E, 12E, 13E, 21W, 22W, and 23W.

In 2008, the following work is planned:

13 kV Breakers
The planned scope is to complete West 65th St Station #2, and proceed with breaker retrofits at East 75th St. This plan was developed so that work can proceed at East 75th while the retrofits at West 65th will be hampered due to outages in the same load pocket for the commissioning of Astor Substation.

The W65th St. 2008 schedule encompasses five (5) bus sections with 19 breakers in total.

The E75th St. 2008 schedule encompasses five (5) bus sections with 30 breakers in total.

27 kV Breakers
The following Substations 27 kV breakers are being targeted for replacement in 2008. The actual work schedule will be determined by outage availability:
Bensonhurst – eight (8) breakers
Greenwood – six (6) breakers
Jamaica – eleven (11) breakers
North Queens – five (5) breakers
Corona – four (4) breakers

Funding ($000):

Forecast 2009	Forecast 2010	Forecast 2011	Forecast 2012	Forecast Total 2009-2012
10,800	10,800	10,800	10,800	43,200

Substation Operations – 2009 Capital

Project Title	Failed Transformer Program
Status	Engineering
Service Date	Based On Failures

Work Description:
This on-going program provides funding for the restoration work required to replace transformers in our Area and Transmission Substations as well as Generating Stations on an emergency basis, whenever they unexpectedly fail.

Justification:
This on-going program covers the cost of replacing three failed transformers (transformers, phase angle regulators and reactors) per year. Based on a historical average, the budget typically provided for three transformer failures per year. The funding level required for this is estimated at $12 Million/year. The budget for each year provides carryover of a unit failure in the fourth quarter of the previous year. This cost includes the installation of an existing system spare and the purchase of a replacement for the utilized system spare. To quickly restore system capacity and reliability to pre-failure levels, spare transformers are maintained for most types of units in the system. The spare units are purchased and kept on hand due to the long lead-time required for delivery of a new transformer. The spare units are pre-tested and partially assembled to reduce the time required for replacement of a failed unit. The spare units are prepared for long-term storage at the Astoria Spare Transformer Yard and at other Company satellite locations.

In 2007, we completed a reevaluation our recent transformer failure activity and the increased transformer manufacturing lead times which resulted in amending our spare retention policy to insure reasonable probability of spare availability in the event of a transformer failure. This has resulted in a need to increase our spare transformer inventory as well as to purchase replacements for spares actually used. There have been recent cost increases in the basic materials required to manufacture transformers. This has had a dramatic impact on transformer costs. A summary of the additional funding requirements (in addition to the annual $12 Million to allow for 3 replacements/year) necessary to adopt this policy for the years 2008-2011 is attached. Spending will increase in those years to allow for our inventory levels to increase as required.

In 2012, we will return to funding levels expected to simply allow for three transformer replacements per year.

Completion Date:
This is an on-going program to replace malfunctioning transformer equipment as required.

Status:
As required

Funding ($000):

Forecast 2009	Forecast 2010	Forecast 2011	Forecast 2012	Total Forecast 2009 -2012
33,960	22,285	20,285	12,000	88,530

Substation Operations – 2009 Capital

Additional Spare Units	Direct Cost	Loaded Cost	P.O. Placed	2008 Cash Flow	2009 Cash Flow	2010 Cash Flow	2011 Cash Flow	Total Cash Flow 2008 - 2010	Total Cash Flow 2008 - 2011
65 MVA Spare Unit	$2,750	$4,250	P.O. Placed w/ ABB	$1,100	$3,175	-	-	$4,275	$4,275
65 MVA Spare Unit	$2,750	$4,250	P.O. Placed w/ EBG	$1,100	$3,175	-	-	$4,275	$4,275
300 MVA PAR Spare Unit	$5,300	$8,285	Purchase Requisition Written – no P.O.		-	$8,285	-	$8,285	$8,285
300 MVA PAR Spare Unit	$5,300	$8,285	Purchase Requisition Written – no P.O.		-	-	$8,285	$0	$8,285
234 MVA Spare Unit	$4,300	$6,370	P.O. Placed with Siemens	$667	$5,037	-	-	$5,704	$5,704
234 MVA Spare Unit	$4,300	$6,370	P.O. Placed with Siemens	$666	$5,036	-	-	$5,702	$5,702
138 kV Series Reactor Spare Unit	$2,000	$3,065	Purchase Requisition Written – no P.O.	$500	$500	$2,000	-	$3,000	$3,000
Spare Unit Sub Total				$4,033	$16,923	$10,285	$8,285	**$31,241**	$39,499
234 MVA Rainey 7W Replacement Unit	$4,300	$6,370	P.O. Placed with Siemens	$667	$5,037			**$5,704**	$5,704
Totals				$4,700	$21,960	$10,285	$8,285	**$36,945**	$45,230

Substation Operations – 2009 Capital

Project/Program Title	Rainey Transformer 7W Replacement
Status	Design/engineering
Estimated Service Date	2009

Work Description:
The original transformer 7W was a 234 MVA three winding transformer 345/138/13 kV. The transformer failed in 2007 and the available spare did not have a tertiary winding. As a result two transformers were used to replace the failed bank; a 345/138 kV bank (330 MVA) and a separate 138/13 kV.

Justification:
Replace the two banks installed in 2007, with a new 345/138/13 kV transformer and return the 345/138 kV bank and the 138/13 kV bank to storage. The 345/138 kV bank that was used as replacement, is a spare for bank for the system 230 MVA rated transmission banks.

Estimated Completion Date:
The project has a completion date of 2009.

Status:
Design/Engineering stage.

Funding ($000)

Forecast 2009	Forecast 2010	Forecast 2011	Forecast 2012	Forecast Total 2009-2012
4,000	-	-	-	4,000

The revised funding reflects only the installation cost, since the bank was previously purchased.

Substation Operations – 2009 Capital

Project/Program Title	Failed Equipment Program Other Than Transformers
Status	On-going
Estimated Service Date	Various

Work Description:
This on-going program provides for the restoration work required to replace or repair various pieces of equipment to enhance system reliability. This program primarily covers unanticipated failures of substation equipment such as circuit breakers, capacitor banks, potheads, L&P transformers, bus, disconnect switches, potential transformers, and coupling capacitor potential devices in our area and transmission substations.

Justification:
This is an on-going program with funding based on historical spending levels. This program is necessary to fund the restoration of unanticipated equipment failures to maintain system design configuration and reliability. This program helps minimize the need to reallocate resources from other capital projects and programs in response to unanticipated equipment failures.

Estimated Completion Date:
This is an on-going program.

Funding ($000):

Forecast 2009	Forecast 2010	Forecast 2011	Forecast 2012	Forecast Total 2009-2012
1,500	1,500	1,500	1,500	6,000

Substation Operations – 2009 Capital

Project/Program Title	Control Cable Upgrade Program
Status	On-going
Estimated Service Date	On-going

Work Description:
This program provides funding to replace the older cables, conduits, and junction boxes that have experienced a higher failure rate. The cable is typically run outdoors in covered troughs and ducts and in some cases, conduit. In addition, necessary changes to trough and duct systems will be made, if required, to accommodate the new cables.

Justification:
AC and DC cables installed on substation property are exposed to varying environmental conditions that have resulted in some cable failures and subsequent inadvertent trips of electrical equipment. Equipment trips impact system performance and can cause outages if severe. The integrity of these cables support maintaining high-speed fault clearing provided by the relay protective devices and for SCADA systems. In the past 3-4 years, we have experienced insulation failures of these cables in various substations. This enhancement of our control cable will improve performance and reduce the amount of troubleshooting and repairs.

Estimated Completion Date:
This is an on-going program and work is accomplished on a priority basis determined by cable condition and performance.

Status:
Cables, conduits, and junctions boxes that have experienced a high failure rate at Sherman Creek, Dunwoodie, and Greenwood Substations are slated for replacement in 2008/2009. We are planning to replace the older cables, conduits, and junction boxes at other stations in the future with priority determined by those stations that have experienced historical grounding issues.

Funding ($000)

Forecast 2009	Forecast 2010	Forecast 2011	Forecast 2012	Forecast Total 2009 - 2012
1,000	1,000	1,000	1,000	4,000

Substation Operations – 2009 Capital

Project/Program Title	Relay Modification Program
Status	On-going
Estimated Service Date	On-going

Work Description:
This program provides for technology upgrades to the relay protection systems at various substations.

1. New microprocessor relays are being installed to provide security against incorrect relay operations during the feeder energization process caused by magnetic inrush current. Phase I of this effort will address the 26 feeders with more than 32 MVA of total connected transformer capacity where relay settings alone cannot provide adequate security. Phase II of this effort will modify the protective relay systems for feeders with 32 MVA, or less, of total connected transformer capacity where relay settings alone cannot provide adequate security.
2. New microprocessor relays are being installed to replace protection communication circuits that do not provide protection against communication line disturbance.
3. Upgrading existing electro-mechanical fault detector relays used in conjunction with distance relays to provide security from mis-operations. There are approximately 100 such relays currently in service that will require the upgrade.
4. Upgrade the existing obsolete, first generation solid state Westinghouse SBFU breaker failure timer relays currently installed on transmission level breakers. There are approximately 90 such relays in service in our transmission substations.

Justification:
Implementation of this program will upgrade protection equipment to modern standards, improving reliability, preventing incorrect automatic relay operations, and providing better analysis capabilities.

1. Magnetic inrush current: In July 2006, there was a major power outage in the Long Island City network. Network transformer magnetizing inrush current resulted in the energization of primary feeder connected transformers causing the unintended opening of four (4) 27 kV circuit breakers at the North Queens Substation. These modifications are necessary to prevent incorrect relay operations during feeder energization.
2. Pilot wire relays: In June 2007, there were multiple feeder trip outs at Astoria West and Queensbridge substations. The protection communication circuits for these feeders are provided via Verizon T1 lines. The existing arrangement does not provide protection against communication line disturbance and does not provide the design features of modern relays for analytical use. Communication line disturbance has caused inadvertent loss of feeders. These relays need to be replaced with modern state of the art relays to provide for a reliable and secure protection system.
3. Fault detector relay: The new Intelligent Electronic Device (IED) replacement relay will allow automatic change of the pre-programmed relay settings in response to various system configurations in substations. This new design will greatly enhance the overall security of the relay system without compromising the reliability of operation during actual fault conditions.

4. Westinghouse SBFU: The current relays have a high power supply failure rate which renders the relay inoperable. In addition, the existing control cards have a high failure rate. The loss of such failure timers results in lost/compromised relay protection on transmission level breakers impacting reliability. This upgrade to IED-based devices will significantly enhance the reliability of these relay systems as well as provide additional capabilities such storing oscillograph files after a relay operation to determine the root cause, and providing flexibility in relay application logic to suit the application.

Estimated Completion Date:
This is an on-going program.

Status:
Relay modifications were completed at the following locations in 2007:

Location	Substation	Feeder (Feeder Position)
Manhattan	E. 40th Street #1	4M86 (42S)
	E. 40th Street #1	4M67 (12N)
	W. 42nd Street #2	21M23 (81S)
	W. 50th Street	5M94 (42E)
Staten Island	Fox Hills	33R14 (82S)
	Fox Hills	33R13 (71S)
	Fox Hills	33R15 (81S)
	Fox Hills	33R12 (51S)
	Fox Hills	33R28 (21S)
Brooklyn	Glendale	6Q27 (12E)
	Brownsville #2	9B04 (92E)
	Brownsville #2	9B05 (62E)
	Brownsville #2	9B06 (82E)
Queens	Jamaica	5Q56 (62E)
	Jamaica	5Q52 (51E)
	Jamaica	5Q53 (61E)
Westchester	Granite Hill	15W10 (33N)

Planned relay modifications for 2008 include (scheduled dates are tentative):

Location	Substation	Feeder (Feeder Position)	Dates Scheduled
Queens	Jamaica	5Q36 (43W)	1/15 - 1/18/2008
	Jamaica	5Q50 (43E)	1/15 - 1/18/2008
	Corona	7Q63 (32N)	1/10 - 1/13/2008
	Corona	7Q85 (32S)	1/10 - 1/13/2008
	Corona	7Q64 (42N)	1/17 - 1/20/2008
	Corona	7Q86 (42S)	1/17 - 1/20/2008
	Corona	7Q72 (43N)	1/24 - 1/26/2008
	Corona	Spare (43S)	1/24 - 1/26/2008
Brooklyn	Brownsville #2	9B17 (72W)	1/19 - 1/21/2008

Location	Substation	Feeder (Feeder Position)	Dates Scheduled
Queens	QB & AW	28242	3/24/08
	QB & AW	28243	11/12/08
	QB & AW	28241	TBD
	QB & AW	28244	TBD

Substation Operations – 2009 Capital

Funding ($000)

Forecast 2009	Forecast 2010	Forecast 2011	Forecast 2012	Forecast Total 2009 - 2012
5,500	5,500	5,500	5,500	22,000

Substation Operations – 2009 Capital

Project/Program Title	Upgrade Analog Circuits to Digital Fiber
Status	In-Progress / Engineering
Service Date	On-going

Work Description:
This project allows for replacing aged and poor performing analog relay communication circuits, which are Verizon copper telephone lines, by installing digital multiplexing communication equipment at selected substations. New digital and fiber lines will then be used to replace the analog circuits. Each installation will include two completely diverse sets of equipment in order to use both the Verizon and Con Edison's (where available) fiber optic infrastructure, which provides both redundancy and diversity in the communication paths.

Justification:
A review of the transmission feeder outages in 2002 due to feeder relay protection communication failures found that of the 1319 feeder outages taken that year, 27 % were attributable to problems on leased circuits. A similar review performed in 2003 found that of the 949 feeder outages taken that year, 30% were attributable to problems on leased circuits.

The protective relay systems on bulk power transmission feeders use copper telephone lines to communicate between substations. There are at least two lines of communication between the two redundant relay protection systems on each transmission feeder. The relay protection systems on these transmission feeders provide high-speed isolation of short circuits on the feeder cables and equipment thereby preventing a cascading effect of the short circuit on the electric system.

This multi-year enhancement project upgrades the communication channels and provides discrete diversity in communication lines by using both the Verizon and Con Edison's fiber optic network to connect the two lines of relay protection on each transmission feeder.

We continue to monitor, on a monthly basis, the performance of the remaining copper telephone lines, and we may change the order of future work based on circuit performance.

Estimated Completion Date:
This is a multi-year project and will continue until 2011.

Status:
In 2007, fiber optic lines and equipment were installed and turned on at 12 locations. Field visits and walk-downs continued for the next phase which includes the installation of T1 lines so that relay protection lines can be established.

The planned scope for 2008 is to have fiber lines and equipment installed at the next identified locations. The continuation of T1 line installation for relay protection along with the implementation of relay circuit protection will also continue on parallel paths.

Funding ($000):

Forecast 2009	Forecast 2010	Forecast 2011	Forecast 2012	Forecast Total 2009 - 2011
2,000	2,000	1,800	-	5,800

Substation Operations – 2009 Capital

Project/Program Title	Additional Ground & Test Devices
Status	On-going.
Estimated Service Date	On-going

Work Description:
This program will fund the replacement and/or addition of ground and test devices for various substations to attain an optimal ratio of approximately 1.5 Ground and Test (G&T) devices per full section (8 feeders) at all substations.

Justification:
G&T's are used for applying 3 phase grounds on network distribution feeders for feeder processing. The G&T provides a break and a ground to meet Con Edison employee protection requirements when accessing feeders to perform work. Maintaining an inventory of at least 1.5 G&T devices per full section is required to effectively support feeder processing under multiple contingency conditions.

Estimated Completion Date:
This is an on-going program

Status:
During 2008 the project will purchase an additional G&T device for West 19th St. and poll the Area Managers to re-evaluate and prioritize where the greatest need is. The results of the polling and the prioritization will determine where in the system additional G&T's are required in 2009.

Funding ($000):

Forecast 2009	Forecast 2010	Forecast 2011	Forecast 2012	Forecast Total 2009-2012
1,000	1,000	1,000	1,000	4,000

Substation Operations – 2009 Capital

Project Title	Area Substation Reliability and Auto Ground Circuit Switchers
Status	On-going
Estimated Service Date	On-going

Work Description:
This program provides for the installation of two independent lines of protracted fault protection with electrical and physical separation for the area station transformers. The first line of protection is provide by the installation of a circuit switcher, which is tripped by normal primary protection, and the second line of protection is provided by an interrupter, which is tripped by a separate and independent back-up protracted fault protection system located in the transformer vault. If space is a limitation, then the second line of protection can be provided by a transfer trip relay scheme.

Also, the previous Auto Ground Switch (AGS) retirement program has been combined with this reliability program and where feasible the work will be done simultaneously.

Justification:
A single-mode failure philosophy was developed to prevent extensive damage and station shutdown from a sustained 13kV fault. The philosophy includes the addition of an independent line of protracted fault protection, installation of a 138 kV transformer circuit switcher and interrupter, the provision for control cable system route separation, separate DC supply systems, switchgear compartmentalization, and improved fire rated design. The design philosophy has changed since some older substations were designed and constructed. Upgrading existing area substations to meet present design philosophy will reduce the possibility of loss of the area substation during a protracted fault incident. Also, as part of this program we will look to retire the AGS where feasible.

Estimated Completion Date:
This is a long-term program that needs to be implemented at other area substations.

Status:
On-going

Funding ($000):

Forecast 2009	Forecast 2010	Forecast 2011	Forecast 2012	Forecast Total 2009-2012
10,500	10,500	10,500	10,500	42,000

Substation Operations – 2009 Capital

Project /Program Title	Battery and Rectifier Replacement Program
Status	On-going
Estimated Service Date	On-going

Work Description:
This program is to replace batteries that have reached the end of their life cycle with new batteries and upgrade obsolete DC system equipment with new battery chargers, load boards, rectifiers, and the associated cables and conduits.

Justification:
This program ensures the continued reliability of substation DC systems.

All substations have two DC power systems to provide a highly reliable source of power during both normal station operation and in emergency situations when all off-site AC power is lost. Each DC system consists of a battery, battery charger and load board with instrumentation. The nominal control voltage of the DC system is 125 or 250 volts. Some existing substations utilize 125 or 250 volts DC for controls and relaying and 48 volts for monitoring and indication. The DC system provides power for the control and operation of the circuit breakers, circuit switchers, alarms, power transformers, protective relaying systems, supervisory controls, fire protection controls, etc. Therefore, it is imperative that the DC supply system be made as secure and reliable as possible.

The typical life cycle of a substation battery is 15 years. After 15 years of service, a battery is evaluated for continued reliability; however, experience has shown that batteries usually require replacement at this time or sometimes sooner depending on their operating environment and duty cycle. Condition monitoring assures that batteries remain reliable and identifies when battery performance is degrading and early replacement may be necessary. When batteries are to be replaced, an Engineering load study is performed to properly size the replacement battery. Over time, the addition of new substation equipment such as new feeder positions, computers, and intelligent electronic devices (IED) can result in increased DC load requiring the need to increase battery size. The DC systems are sized to operate for 8 hours with 1 battery or 24 hours with 2 batteries in the event of a loss of AC power. This load study also determines if upgrades to the remaining DC components are required when a battery size is increased. The replacement of the battery chargers will assure proper charger sizing for the new batteries and will include modern control circuitry. The new instrumentation systems will provide accurate and reliable measurement and monitoring of the DC system conditions and will provide out-of-limit alarms. Prioritization of the DC upgrades is based on equipment age and condition. Systems at greater risk because of failed obsolete components are targeted first.

Estimated Completion Date:
This is an on-going program.

Status:
The following work was completed in 2007:

- Upgrades were completed at East 13th Street, West 19th Street, Avenue A, and Cherry Street Substations that were carry-overs from 2006.
- Upgrades were started and completed at West 49th Street, West 50th Street, and Leonard Street Substations.
- A total of 7 batteries were replaced at 5 substations: East 63rd Street, Ossining, West 65th Street, and Dunwoodie South.

Substation Operations – 2009 Capital

Work planned for 2008 includes:

- Completion of upgrades at Cedar and Bruckner substations carried over from 2007.
- Starting upgrades at 4 substations, Farragut, Sherman Creek, Willowbrook, and Astoria West.
- 20 battery replacements at 12 substations. Those substations are West 65th Street, Dunwoodie 345 kV, Hudson Ave. East, West 110th Street, Fresh Kills 345 kV, East 40th Street, Pleasant Valley, Gowanus, Bensonhurst, Hudson Ave. East, Millwood 138 kV, Millwood 345kV, and Bruckner.

Funding ($000):

Forecast 2009	Forecast 2010	Forecast 2011	Forecast 2012	Forecast Total 2009 - 2012
3,500	3,500	3,500	3,500	14,000

Substation Operations – 2009 Capital

The following is a list of those batteries that will reach 15 years of service and are anticipated to require replacement during the time period 2008 – 2012.

Date	Station	Location	Voltage
2008	East 40th	Control 1	125V
A2008	East 40th	Control 2	125 V
2008	Pleasant Valley	Control 1	125V
2008	Gowanus	Control 1	125V
2008	Bensonhurst	Control 1	125V
2008	Bensonhurst	Control 2	125V
2008	Bensonhurst	Supervisory 1	48V
2008	Hudson Ave.	Supervisory 2	48V
2008	Millwood (138kV)	Control 1	125V
2008	Millwood (138kV)	Control 2	125V
2008	Millwood (345kV)	Control 2	125V
2008	Bruckner	Control 1	125V
2008	Bruckner	Control 2	125V
2008	West 65th	Control 1	125V
2008	West 65th	Control 2	125V
2008	Dunwoodie (345kV)	Control 1	125V
2008	Dunwoodie (345kV)	Control 2	125V
2008	Hudson Ave East	Control 1	125V
2008	Hudson Ave East	Control 2	125V
2008	Hudson Ave East	Supervisory 1	48V
2008	West 110th	Supervisory 1	48V
2008	West 110th	Super 2	48V
2008	Fresh Kills (345kV)	Control 3	125V
2008	Fresh Kills (345kV)	Control 4	125V
2009	Hellgate	Control 1	125V
2009	Hellgate	Control 2	125V
2009	Sherman Creek	Control 1	125V
2009	Sherman Creek	Control 2	125V
2009	Sherman Creek	Supervisory 1	48V
2009	Harrison	Control 1	125V
2009	Harrison	Control 2	125V
2010	Vernon	Control 1	125V
2010	Vernon	Control 2	125V
2010	Plymouth	Control 1	125V
2010	Plymouth	Control 2	125V
2010	Glendale	Control 1	125V
2010	Glendale	Control 2	125V
2012	Rainey	Control 1	125V
2012	Rainey	Control 2	125V
2012	Rainey	Control 3	125V
2012	Rainey	Control 4	125V
2012	Gowanus	Control 2	125V

Substation Operations – 2009 Capital

Project/Program Title	Capacitor Cable Upgrade Program – Various Locations
Status	On-going
Estimated Service Date	Multi-year program

Work Description:
Approximately 47 capacitor banks, located at 23 different substations, are connected to their supply switchgear with cables rated for less than continuous (24 hour) operation. This program was created at the request of System Operations to upgrade all capacitor connections and cables to provide unlimited operating time periods. Capacitor bank cables are typically installed in an open ladder tray or an underground conduit and connect the capacitor bank to the capacitor bank breaker. Capacitor banks are required to be out of service for the work to commence and outages are subject to system conditions. This program will be implemented over an extended period of time as system conditions dictate.

Justification:
Capacitor banks are installed at various area substations to improve the power factor and to provide voltage control. This increases system capacity and improves the voltage levels under various operating conditions. With the increased use of distribution voltage class capacitor banks to provide voltage control, limited operation periods hamper the ability of the System Operators to maintain scheduled bus voltages. When capacitor cables are energized for prolonged times compared to their design rating, the risk of failure increases, thus reducing system reliability. Upgrading capacitor connections and cables will provide unlimited operating periods.

Estimated Completion Date:
This is a multi-year program expected to extend for ten years dependent upon outage availability.

Status:
During 2007, connection and cable upgrades from the capacitor bank to the capacitor bank breaker were completed at the West 42nd St. 13kV Substation and the Brownsville 13kV Substation.

For 2008, cable and connection upgrades will be performed at the following stations:
West 19th St.13kV Substation: Capacitor Bank #1(in coordination with a scheduled outage on Transformer #4).
Harrison 13kV Substation: 3 capacitor banks
Avenue A, 13kV Substation: 1 capacitor bank

Engineering continues to develop work scopes and packages for Sherman Creek, Parkchester #2, East 179th St, and Buchanan Substations with the plan to complete connection and cable upgrade at Sherman Creek and Parkchester #2 in 2009.

Funding ($000):

Forecast 2009	Forecast 2010	Forecast 2011	Forecast 2012	Forecast Total 2009 - 2012
3,000	3,000	3,000	3,000	12,000

Substation Operations – 2009 Capital

Project/Program Title	Category Alarms
Status	On-going
Estimated Service Date	On-going

Work Description:
This program replaces substation electro-mechanical alarm systems with solid-state microprocessor-based type alarm annunciators. The new alarm annunciator will be equipped with the capability to monitor all individual station alarms and display their condition on a personal computer (PC) located in the station's control room, or remotely on a PC workstation located in a centralized district location.

Justification:
Most station alarm equipment were placed in service as part of station commissioning and on average have been in service for 40 years. Many units require high levels of maintenance and are obsolete so there are no spare parts or vendor support. Replacement of these alarm panels will lead to improved operation by allowing for quick acknowledgement of and response to abnormal station conditions. In 2006, a survey of all existing category alarm panels was completed in response to a recent increase in operational alarm panel issues. The survey revealed problems such as lack of manufacturer support, lack of spare parts, and an increased level of corrective maintenance. This survey also served to identify and prioritize needed alarm panel replacements. Due to the high number of problematic alarm panels, the funding level of the program has been increased to accelerate alarm panel replacements to ensure continued reliability.

Estimated Completion Date:
This is an on-going program.

Status:
In 2007, the program addressed the deteriorating alarm panel conditions at the Sherman Creek Substation. The Sherman Creek Substation alarm panel project is in the last phase of construction which requires alarm panel tie-ins and final testing. This job is expected to be completed in early 2008. The engineering package for E.13th Street alarm panel replacement is under development with an expected construction completion date of September, 2009. Other planned work for 2008 includes alarm panel replacements at Brownsville Substation, Washington Street Substation, and Goethals Substation.

Below is a list identifying twenty problematic alarm panels that have major or frequent issues and will require replacement in the coming years. This is an on-going project and locations will be prioritized on a yearly basis.

Problematic Alarm Panels

1) Farragut
2) Greenwood 138 KV
3) Greenwood 27 KV
4) E. 63rd Street #1
5) E. 63rd Street #2
6) Leonard Street #1
7) Leonard Street #2
8) Corona 138 KV
9) Queensbridge
10) Pleasantville 13 KV
11) Elmsford
12) Harrison
13) Hudson Avenue East
14) North Queens
15) Astoria East
16) Buchanan 345 KV
17) Millwood 345 KV
18) Cedar Street
19) Dunwoodie South
20) Granite Hill

Substation Operations – 2009 Capital

Funding ($000)

Forecast 2009	Forecast 2010	Forecast 2011	Forecast 2012	Forecast Total 2009-2012
2,250	2,250	3,900	3,900	12,300

Substation Operations – 2009 Capital

Project/Program Title	Construct Relay Enclosure Houses
Status	On-going
Estimated Service Date	On-going

Work Description:
This program is to install weatherproof enclosures around relay cabinets to preclude deterioration due to environmental exposure while providing for safe inspection, maintenance, and repairs under all weather conditions. The weatherproof enclosures will consist of a structural frame with composite wall panels attached to the frame. These frames and panels will enclose the existing relay cabinets.

Justification:
The installation of the weatherproof enclosures is a long-term solution to protect relay cabinets from inclement weather and enhance the reliability of the electric system Relays are usually housed in a metal cabinet that is designed to be water-tight and is installed either inside or outside a substation building. When these metal cabinets are exposed to weather, they deteriorate with time. In a number of substations, several of these exposed relay cabinets have deteriorated and jeopardize the reliability of the electric system.

Relays are used to detect electrical problems or faults in transmission and area substations. When these relays detect a fault, they send a signal that operates protective equipment, such as a circuit breaker, which will isolate the fault and limit the damage. Relays will also send a signal to the control room and notify the station operator of the electrical hazard. It is important to ensure that these relays will always function because the detection of electrical problems in the substation will protect the operators in the area, limit the potential damage on substation equipment, and will minimize the number of customer outages. For these reasons, relays must be maintained in a dry and safe environment.

Estimated Completion Date:
This is an on-going program.

Status:
Two relay house enclosures were installed at Astoria East Substation in 2005 and fourteen (14) additional locations were identified and engineering packages were completed. Due to work clearance issues discovered during the first two installations, a re-design of the relay cabinet enclosures affecting all future installations is underway. Revised packages are being prepared for four enclosures at Astoria West Substation with the intent to install these enclosures in 2008. Civil Engineering is developing a schedule for four revised design packages for Corona Substation, four revised design packages for Greenwood Substation and two revised design packages for Vernon Substation. These sites are being prioritized to address future years with the intention of installing four enclosures per year. As this is an on-going program, additional stations will be identified and prioritized for future work.

Funding ($000)

Forecast 2009	Forecast 2010	Forecast 2011	Forecast 2012	Forecast Total 2009-2012
1,500	1,500	1,500	1,500	6,000

Substation Operations – 2009 Capital

Project/Program Title	Corona Settlement
Status	Engineering/Construction
Estimated Service Date	December 2010

Work Description:
This is a multi-year project to correct equipment settlement problems at the Corona Substation. The project is being completed in stages with construction being performed when Engineering develops and issues a package for each segment of work. The scope of work in these packages typically includes stabilizing pothead stands and installing prefabricated concrete control cable trenches.

Justification:
The Corona substation was constructed on reclaimed land. Many of the structures and buried facilities are settling, resulting in damage to foundations, troughs, conduit, splice boxes, and cable. In the past five years, we have experienced damage to substation equipment.

A settlement study was performed by Muser Rutledge Corp. to determine if settlement will continue or if we have reached the end of the settlement issue. Their report states that the ground surface settlement will continue to occur as the result of secondary compression of organic, marsh soils immediately underlying site fills, but at a decreasing rate. Due to expected continued settling, installation of trenches is the first required action to allow for the replacement of existing control cables impacted by the current settlement. This trench system is required to mitigate the problem created by equipment foundation settlement. To ensure that the new trench will not settle, helical screw piles and continuous concrete-grade beams will be used to support it.

The future projects in this program will include foundation reinforcement of leaning and settling pothead structures, and the construction of additional trenches in various locations of the yard.

Estimated Completion Date:
December 2010.

Status:
The work for this project is being accomplished through the completion of six (6) Engineering design packages. The first four (4) packages have been issued and construction completed. The last two (2) Engineering design packages are to be released in April 2008. Following completion of the last two packages, any future settlement issues that develop at Corona Substation will be addressed as conditions dictate.

The following is a detailed summary of the project scope:
Package 1: Installation of 450 feet of prefabricated concrete control cable trench that connected Corona 1 and Corona 2 Substations and the installation of 130 feet of prefabricated concrete cable trench to connect Transformer 5 to both substations
Package 2: Stabilize the pothead stand structure for feeder 18185, which was leaning and settling.
Package 3: Stabilize the pothead stand structures for feeders 34182 and 34186, which were leaning and settling.
Package 4: Stabilize the pothead stand structures for feeders 34184 and 34183, which are also leaning and settling.
Package 5: Will stabilize the pothead stand structures for feeders 18184 and 34185, which are also leaning and settling.
Package 6: Will stabilize the pothead stand structures for feeders 18001, 18002, and 34181, which are also leaning and settling.

Substation Operations – 2009 Capital

Funding ($000):

Forecast 2009	Forecast 2010	Forecast 2011	Forecast 2012	Forecast Total 2009-2012
1,000	1,000	-	-	2,000

Substation Operations – 2009 Capital

Project/Program Title	Diesels / Blackstart Restoration (Upgrade L&P for Feeder Pressurization)
Status	On-going
Estimated Service Date	On-going

Work Description:
During the 2003 Northeast Blackout various company sub-transmission feeders lost pressure which resulted in service restoration delays in certain areas. A multi-phase program was implemented to install back-up feeder pressurization systems in the event of a loss of power to a substation's pressurization plant(s). Phase I of the program called for the installation of back-up nitrogen supplied dielectric fluid pressurization systems or a diesel generator that would provide back-up A/C power to the pressurization plant(s). Diesel generators were installed in fifteen (15) locations where space permitted and nitrogen systems were installed in the six (6) remaining locations. Both systems operate automatically in the event of a complete loss of power and are connected directly to the feeder pressurization plant(s).

Phase II of the program will provide interconnections to utilize the newly installed diesel generators to supply back-up power to the substations' A/C Light and Power (L&P) load boards. The L&P load boards supply 120/208 voltage to components and equipment that enable control and communications (i.e. D/C rectifiers, station lighting, computer systems). Phase II will interconnect 14 of the 15 diesel generators to the Substation L&P load board. The generator installed at Fox Hills Substation replaced an existing unit that supplied the L&P load board directly and thus is excluded from phase II of the project.

Justification:
Interconnecting the new diesels to the A/C L&P load boards will effectively utilize these new assets to improve substation reliability and emergency response time during restoration efforts.

Estimated Completion Date:
This is a multi-year project. This project will interconnect 3 diesels per year until all 14 diesels have been interconnected.

Status:
In 2008, we plan to interconnect the diesel output to the L&P board(s) at Harrison, White Plains, and Woodrow Substations.

Funding ($000):

Forecast 2009	Forecast 2010	Forecast 2011	Forecast 2012	Forecast Total 2009-2012
1,200	1,000	1,000	1,000	4,200

Substation Operations – 2009 Capital

Project/Program Title	East River Complex – Install Reinforced Wall Along the FDR Drive
Status	
Estimated Service Date	December 2010

Work Description:
The East River Complex consists of steam and electric generating units as well as various on-site transmission substations. Public access to this complex has been eliminated and all other Company access is controlled via the requirements of the New York City Police Department. The current plans for the facility include the installation of physical security barriers in addition to camera and surveillance electronic equipment.

In addition to the physical barriers above, structural upgrades consisting of the installation of new reinforced concrete barrier walls between 14th Street and the Franklin Delano Roosevelt (FDR) Drive and 13th Street between the FDR Drive and Avenue D are planned to be installed. The wall on the 13th Street side will be about 20 feet high; while the wall on the FDR Drive will be about 40 feet high. The wall along the FDR Drive will be about 20 feet higher than the existing wall, which will mitigate the wind/spray coming from the drive that builds up on the electrical equipment adjacent to the wall that can cause electrical flash over.

Justification:
After the events of September 11, 2001, security throughout the United States was increased to protect key infrastructure. The installation of new reinforced concrete barrier walls between 14th Street and the FDR Drive and 13th Street between the FDR Drive and Avenue.D will enhance the security of the complex. In addition, the wall will provide a means to block wind and spray from the FDR Drive and increase reliability.

Estimated Completion Date:
The wall installation is scheduled to be completed by the end of 2010.

Funding ($000):

Forecast 2009	Forecast 2010	Forecast 2011	Forecast 2012	Forecast Total 2009-2012
2,500	2,500	-	-	5,000

Substation Operations – 2009 Capital

Project/Program Title	Facility Improvement Program
Status	On-going
Estimated Service Date	On-going

Work Description:
This program funds facility improvements and upgrades at individual substations. The following types of improvements are covered under this program:

- Facility structural improvements related to:
  - Façade
  - Foundation
  - Retaining wall
  - Lifts and platforms
  - Floors
  - Heating and ventilation
  - Lighting
  - Plumbing
- Large scale drainage modifications
- Paving
- Fencing
- Facility related Fire Protection system upgrades, e.g., water supply piping
- HVAC

In addition, Substation Operations has various office facilities that are temporary in nature, housing numerous employees on a daily basis. The first alternative is to relocate employees currently working in these temporary locations to existing facilities, where space would have to be made available and required improvements made. In addition, where sufficient space is not available, based on geographical location and need, either a lease option for space or the development of new space would be required as the second and third alternatives. Some combination of all 3 options may be required to most efficiently and cost-effectively relocate employees to permanent facilities.

Justification:
This program is required to fund larger scale projects not covered by other capital programs. These projects are necessary to improve and maintain substation facilities. Also, discontinuing use of temporary office facilities will support continued efficient deployment of personnel and will provide employees a safe and professional work environment. This program is necessary to correct and upgrade numerous age related structural and facility issues in order to ensure safe and reliable operation of the substations.

Estimated Completion Date:
This is an on-going program.

Funding ($000):

Forecast 2009	Forecast 2010	Forecast 2011	Forecast 2012	Forecast Total 2009-2012
8,000	8,000	8,000	8,000	32,000

Substation Operations – 2009 Capital

The following projects have been identified as candidates to be funded via this program. The total cost associated with all of the projects listed below is approximately $20 Million, so this list represents candidates for multiple years. We expect other projects similar to those listed below to emerge and be added to the candidate listing.

SUB-TYPE	LOCATION	DESCRIPTION	2008 COST ($)
Drainage	Eastview S/S	Storm Drain Improvement - Phase II	180,000
Drainage	Eastview S/S	Modify Roadway to Prevent Water Accumulation	336,000
Drainage	Fresh Kills S/S	Sump Pump Discharge Line Replacement	60,000
Drainage	Fresh Kills S/S	Install Adequate Runoff Solution to Accommodate Heavy Rainfall in the 345KV Yard.	750,000
Drainage	Greenburgh	Upgrade Storm Water Drainage System	450,000
Drainage	Sedgwick Ave.	Replace Drainage Piping	100,000
Drainage	Washington St. S/S	Eliminate Storm Water Runoff from Station onto Adjoining Property	100,000
Expansion	Briarcliff WOL	Modify Second Floor for Additional Storage and Office Space.	690,000
Expansion	Dunwoodie	Install New Prefabricated Building	236,000
Expansion	Dunwoodie	New Office Space in Gallery Area	1,500,000
Expansion	Sedgwick Ave.	Sub Basement Upgrade	8,000
Expansion	Sedgwick Ave.	Office Area Finish	400,000
Expansion	Sprain Brook	Expansion of Control House	1,000,000
Fire Prot	Dunwoodie	Replace Degraded Water Supply Piping for Fire System	1,500,000
Fire Prot	Sprain Brook	New S5 Deluge Valve House For Reactors 4S1, 4S2, 5S1 & 5S2	2,800,000
HVAC	Bensonhurst #2 and Water Street	Add Heat To Switchgear Rooms	1,150,000
HVAC	E. 179th St. S/S	Install New 10 Ton York Air Conditioning System.	150,000
HVAC	E. 63rd St. S/S	HVAC System	278,000
HVAC	Greenburgh	Replace HVAC Unit	13,000
HVAC	Leonard St.	Install New 7.5 Ton Rooftop Air Conditioning Unit.	180,000
HVAC	W. 19th St. S/S	Install Ventilation System	40,000
HVAC	W. 19th St. S/S	Heat Pump System	800,000
HVAC	W. 65th St. S/S	New HVAC	500,000
Lighting	E. 179th St. S/S	Upgrade Lighting	90,000
Lighting	Hell Gate	Upgrade Lighting	75,000
Lighting	Parkchester S/S	Upgrade Lighting System	25,000
Lighting	Sherman Creek	Upgrade Lighting	95,000

Substation Operations – 2009 Capital

SUB-TYPE	LOCATION	DESCRIPTION	2008 COST ($)
Lighting	Tremont	Upgrade Lighting System	10,000
Lighting	W. 65th St. S/S	Upgrade Lighting	41,000
Plumbing	E. 179th St. S/S	Install New Water Pump & Service	350,000
Plumbing	Various	Install Backflow Preventers On Water Supplies	1,500,000
Misc.	Rainey Pumphouse	Seal Moat Flr Of Ph #6	125,000
Safety	E. 63rd St. S/S	Install Safety Rail	60,000
Safety	Sherman Creek	Install Fencing Near Feeder 339 & 333 Pothead Stands	96,000
Safety	Various - Bronx	Install New Acid Containment Barriers In Battery Rooms	110,000
Yard Imp	147th St. PURS	Replace Walls	263,000
Yard Imp	Astoria	Transformer Yard Improvements (Phase I)	1,000,000
Yard Imp	Ave. A S/S	New Steps At SW House By Cap Banks	75,000
Yard Imp	E. 179th St. S/S	Regrade Sidewalk	100,000
Yard Imp	Fresh Kills S/S	Install New Sidewalk And Curbing Along Exterior Of Station	354,000
Yard Imp	Goethals	Remove Railroad Ties - Backfill And Pave Area	130,000
Yard Imp	Various	Modify Fences To Provide Sufficient Egress	150,000
Yard Imp	Webster Ave. PURS	Modify Retaining Wall To Improve Drainage And Removed Damaged Areas.	352,000
Yard Imp	World Trade Ctr.	WTC Transformer Vault #1 Exit	500,000

Substation Operations – 2009 Capital

Project/Program Title	Fire Pump Test Header Installation
Status	Planning and Engineering
Estimated Service Date	Multi-Year Program

Work Description:
This project is to modify the existing substation fire protection fire pump piping by adding a fire pump discharge valve and a fire pump test header including valve, piping and test header manifold. This will be performed at thirty four (34) substations. This is a multi-year project starting in 2008 and completing six (6) substations per year.

Justification:
These modifications, including the addition of valves and a fire pump test header, are required to comply with NFPA and NYC Codes and regulations. This modification will also provide a means to test and evaluate the condition of the fire pumps to insure proper performance for adequate protection of transformers. The addition of the fire pump discharge valve will improve equipment availability by eliminating the need to shutdown all transformer deluge system valves at a location while performing the weekly required ten (10) minute operating fire pump test. Performance of the weekly test presently results in taking all fire systems and all fire department siamese connections out of service for the duration of the test.

Estimated Completion Date:
On-going.

Status:
The 2008 planned work scope is to implement the modifications to the fire pump system at the following six (6) substations: Fox Hills, Fresh Kills, Willowbrook, Farragut, Plymouth St. and Water Street.

Funding ($000):

Forecast 2009	Forecast 2010	Forecast 2011	Forecast 2012	Forecast Total 2009 - 2012
500	500	500	500	2,000

Substation Operations – 2009 Capital

Project/Program Title	High Voltage Test Sets
Status	Planning
Estimated Service Date	On-going

Work Description:

DC High Pot Test Sets
There are 100 fixed and 7 mobile high voltage D/C test sets in Substation Operations that are used for distribution feeder processing. This program will purchase and replace 3 D/C test sets per year.

A/C Very Low Frequency (VLF) Test Sets Mobile & Fixed Location
There are currently 3 mobile A/C VLF test sets for distribution feeder processing on the Con Edison system (one per operating region in Manhattan, Brooklyn/Queens, Westchester/Bronx). Under this program, we will increase the number of mobile sets with the purchase of an additional 3 mobile A/C VLF test sets. We will also purchase and install 3 fixed A/C VLF station test sets per year to expand the number of A/C hi-pots performed on distribution feeders.

A/C Test Sets, 345 kV
This program will also fund the purchase of 2 new 345 kV transmission voltage A/C test sets. These units will be utilized at W49th St., and Dunwoodie substations.

Justification:

DC High Pot Test Sets
A minimum of two (2) feeder processing DC test sets per distribution station are required to process feeders. These test sets will be used to perform on-site testing and diagnostics of medium voltage feeder cables primarily for 4, 13, 27, and 33 kV feeders and for locating network ground faults (outside of the station). Various test sets are over 20 years old and require constant repair. The replacement program will systematically replace existing test sets based on age, corrective maintenance, and availability of parts. The worst performing test sets will be slated for replacement first.

A/C VLF Test Sets Mobile & Fixed Location
These test sets will be used to perform on-site testing and diagnostics of medium voltage feeder cables primarily for 4, 13, 27, and 33 kV feeders. This program is to support conducting A/C hi-pot testing on EPR and Poly cable. The test sets are required to meet our feeder processing objectives and recommendations to conduct more VLF A/C hi-pot tests.

A/C Test Sets, 345 kV
The W49th St. test set is no longer supported by the manufacturer and is approximately 30 years old. Dunwoodie Substation no longer has an A/C test set. It is no longer functioning and has reached the end of its useful life and cannot be repaired. These sets are used to perform conditioning and proof tests of equipment after overhauls and repairs, and are no longer reliable. Replacement of these units will eliminate the need to rent units when required which is not preferred due to cost and vendor availability constraints. The transmission test sets are required to maintain the reliability of station equipment and to ensure equipment is tested prior to restoring to service.

Estimated Completion Date:
On-going.

Substation Operations – 2009 Capital

Status:
Three (3) D/C high pot test sets are planned to be purchased and installed in 2008.

The A/C VLF test set purchase specification has been finalized and approved by Engineering. The number of sets we receive in 2008 is dependent on the manufacturer's ability to meet the demand. Engineering has prioritized the 27 kV networks as a guide for placement of the received A/C VLF test sets.

Engineering is continuing the development of a purchase specification for the 345 kV A/C test sets. Due to the long lead time for manufacture and delivery of this equipment, the cash flow for this program has been revised to reflect the costs of this equipment being incurred in 2009 instead of 2008.

Funding ($000):

Forecast 2009	Forecast 2010	Forecast 2011	Forecast 2012	Forecast Total 2009-2012
5,000	2,000	2,000	2,000	11,000

Substation Operations – 2009 Capital

Project/Program Title	MAXIMO Upgrade
Status	Planning
Estimated Service Date	2009

Work Description:
This project provides funding to upgrade all current Maximo users to the newest vendor-supported version of this product and to upgrade and install as necessary all interfacing asset management products. 2008 activities will include analysis and interface re-writes in preparation for software modifications to be made and implemented in 2009.

Justification:
The Maximo system is the backbone of Substation work management and time recording and is essential for efficient operation and maintenance. To protect Con Edison's network infrastructure from cyber intrusion, it is essential that virus signatures and software patches be applied regularly. Since software patches are not available for unsupported software, software products in use must be maintained and supported by the vendor. The version of Maximo currently in use will not be supported with software patches by the vendor in the near future. This project will provide for the security patches and improve work management efficiency and security of our data.

Estimated Completion Date:
This multi-year program will complete this upgrade by the 4th quarter of 2009. Future upgrades will be performed as necessary to maintain the software reliability.

Status:
The planned work for 2008 includes the installation of servers and software to establish an upgraded in-house development environment of the software. This version will then be used to train staff and perform analysis and testing in preparation for the upgrade to the production environment.

The scope of work for 2009 is to complete the upgrade by installing the remaining servers, training personnel, completing customizations to the software, final testing and implementation.

Funding ($000):

Forecast 2009	Forecast 2010	Forecast 2011	Forecast 2012	Forecast Total 2009 - 2012
400		-	-	400

Substation Operations – 2009 Capital

Project/Program Title	Rapid Restore – Expansion of TOMS
Status	On-going
Estimated Service Date	On-going

Work Description:
This project provides funding for enhancement to the Rapid Restore System. The Rapid Restore System was implemented to provide improved communication through a standardized computer application. Rapid Restore TOMS enhances the communication between the District Operator (located at the Energy Control Center (ECC)) and a Substation Operator by providing substation operators with the electronic interface (via operating orders and work permits) to process transmission equipment. Prior to the release of Rapid Restore TOMS, Rapid Restore specialized in providing its users with the electronic interface to process distribution feeders only.

Justification:
Implementation of Rapid Restore improves productivity and feeder processing time. Previously, a number of phone calls between the Substation Operator and the District Operator (DO) were necessary in order to issue and verify moves, clarify feeder numbers and locations, and to understand the Operating Order objectives. Rapid Restore, however, eliminates the need for many of the phone calls by providing an electronic means of downloading Operating Orders and Work Permits to the Substation Operators. Substation Operators can view all the details of the orders or permits on line and elect to accept them if they are accurate or reject them if there is any inaccuracy or miscommunication. Rapid Restore TOMS minimizes the number of phone calls, thereby improving productivity, feeder processing time, and reducing error.

Estimated Completion Date:
This is an on-going effort.

Status:
The system has been installed; however, there are many opportunities for improvement. A user group meets regularly with Information Resources and program enhancements such as the ability to override a work permit and the creation of Operating Order templates, have been identified that will be worked on and incorporated in 2008. Further enhancements are anticipated in future years as use of the system is expanded.

Funding ($000):

Forecast 2009	Forecast 2010	Forecast 2011	Forecast 2012	Forecast Total 2009-2012
200	200	200	200	800

Substation Operations – 2009 Capital

Project/Program Title	Reinforced Ground Grid
Status	On-going
Estimated Service Date	On-going

Work Description:
This program is to install a reinforced ground grid at Astoria East Substation and to establish a continuing program to address similar ground grid issues at other substation facilities.

The reinforcement of the ground grids will be evaluated on a station by station basis and may require the installation of two (2) additional 1000 MCM ground cables and ground rods parallel to existing 1000 MCM ground cables. The actual geometry and number of rods will depend on the particular station. The ground cables shall be connected to existing ground grid. All new structures/equipment being installed in the yard will be connected to the new 1000 MCM ground conductors. In addition, existing structures/equipment that have unresolved high grounding impedance conditions and/or requires an additional ground connection will be connected to the new 1000 MCM ground conductors.

Justification:
Lightning struck a transmission tower at the Astoria East Substation and caused extensive damage to a revenue metering current transformer and its associated wiring. An investigation revealed that the A-frame Tower was not properly grounded and various substation structures and equipment within the Astoria East yard had high grounding impedance. Inspections to determine the cause of the high impedance revealed several instances of damaged ground connection cables and one of the two main 1000 MCM cables that made up the existing main ground grid was badly corroded.

The excessive corrosion and deterioration of ground cables and underground connectors due to age related degradation require the ground grid be reinforced to minimize damage in the event of lightning strikes, switching surges, equipment and/or feeder faults. Ground grid deficiencies are identified through the Company's periodic ground impedance test program.

Estimated Completion Date:
On-going

Status:
The reinforcement of the Astoria East Substation ground grid is expected to be completed in the late spring or early summer of 2008. The ground grid system at the Astoria West Substation is also planned for reinforcement in 2008. Rainey and Vernon substations are currently expected to follow Astoria West Substation. Other stations may be added to the program based on the findings of the testing program.

Funding ($000):

Forecast 2009	Forecast 2010	Forecast 2011	Forecast 2012	Forecast Total
500	500	500	500	2,000

Substation Operations – 2009 Capital

Project /Program Title	Revenue Metering Upgrade
Status	Engineering / In-Progress
Estimated Service Date	2012

Work Description:
The existing JEM electrical revenue meters associated with the inter-utility tie-lines between the Company and other transmission owners and utility companies do not meet the new NYISO Revenue Metering Requirements. These meters do not have the ability to record load profile data or to be accessed remotely by telephone dial-up or other communication means, as required by NYISO.

In addition, the revenue meters associated with the Waldwick/South Mahwah Inter-tie, K-line, and the Long Mountain/Pleasant Valley Inter-tie, Feeder 398, do not measure power flow on these two tie-lines with the accuracy required by NYISO.

This project will replace the existing JEM electrical meters associated with tie-line revenue metering and install communication capabilities to access the new electrical revenue meters, and, modify the revenue metering systems associated with K-line and Feeder 398. The work scope includes purchasing new revenue meters, and test switches, engineering, wiring and cabling, installation and testing of the new revenue metering system including data communication. Purchase and installation of instrument transformers for the modifications associated with K-line and Feeder 398 may also be required.

Justification:
This project will ensure that the tie-line revenue meters that the Company is responsible for are fully compliant with the NYISO Revenue Metering Requirements. It will also ensure that the electricity wheeled through these tie-lines is accurately accounted for and correctly paid for. The new metering system and test switches will also enable the Company to perform calibrations and maintenance more efficiently.

Estimated Completion Date:
This is a multi-year project that is scheduled to complete in 2012.

Status:
The scope of work for 2007 included performing engineering work and revenue metering upgrades for Feeder S1 and Feeder 398, both at Pleasant Valley Substation, and for C3403 at Farragut Substation. The existing electrical revenue meters located at the Pleasant Valley & Farragut Substations for the inter-ties were obsolete. The project required the issuance of new drawings ("As-Built") to reflect changes associated with the replacement of the revenue metering for these locations which resulted in the removal and replacement of the existing JEM2 revenue meter with a JEMSTAR revenue meter. The revenue metering upgrade for S1 at Pleasant Valley Substation was completed on November 8, 2007. The revenue metering upgrade for C3403 at Farragut Substation was completed November 19, 2007. Feeder 398 will be completed during the first quarter of 2008 once the drawings are corrected.

The planned scope of work for 2008 includes revenue metering upgrades for Feeder A2253 at Goethals Substation in addition to revenue metering upgrades for Feeders RFK305 and F33 at East Fishkill Substation. Feeder 398 at Pleasant Valley Substation is also slated for completion.

Substation Operations – 2009 Capital

Funding ($000):

Forecast 2009	Forecast 2010	Forecast 2011	Forecast 2012	Forecast Total 2009-2012
500	500	500	500	2,000

Substation Operations – 2009 Capital

Project /Program Title	Roof Replacement
Status	On-going
Estimated Service Date	On-going

Work Description:
This program provides replacement of roofing on buildings at our substations and other facilities where the roofing has reached the end of its useful life and leaks and/or deterioration are found.

The Company has an on-going program to inspect each of 500 roofs once every five years. A large number of our facility roofs are old and have been repaired numerous times. The roof inspection program reveals which of our roofs have deteriorated beyond repair. Roofs are replaced at the end of their useful life.

Justification:
Water intrusion due to roof leaks can result in equipment damage and affect substation reliability. Standing water on floors and roofs causes slippery conditions and electrical hazards that are personnel safety concerns. Prolonged exposure to water intrusion causes concrete spalling, corrosion of rebar, and degradation of the structural integrity of the building. The installation of new roofing will eliminate leaks and the operational and safety hazards associated with water intrusion and accumulation. Removal of existing roofing materials will also assure any asbestos issues, if present, are alleviated. This is a system enhancement program.

Estimated Completion Date:
Roofing inspection and replacement is part of an on-going program that will extend into the foreseeable future.

Status:
During 2008, installation will be completed on the nine (9) roof replacement projects started in 2007. Engineering will issue an additional twelve (12) roof replacement packages for construction and will have approximately 60 to 70 roof inspections completed.

The planned work for 2009 includes completion of any roof projects not finished in 2008 and starting work on an additional twenty three (23) roof replacement packages that are scheduled to be released from Engineering.

Funding ($000):

Forecast 2009	Forecast 2010	Forecast 2011	Forecast 2012	Forecast Total 2009-2012
3,000	3,000	2,100	2,100	10,200

Substation Operations – 2009 Capital

Project/Program Title	Small Capital Equipment Program
Status	On-going
Estimated Service Date	On-going

Work Description:
This program funds various smaller scoped equipment related modifications and upgrades at individual substations, as required. It also covers safety related items.

Minor improvements, such as the following, are covered under this program.

- Feeder Pressure Alarms
- Station Monitoring and Control System Improvements
- Fire protection/detection system upgrades
- Equipment related enclosures and foundations
- Electrical testing facilities
- Station Light and Power Upgrades
- Safety Related Items
- Other Miscellaneous Projects

Justification:
This program is required to fund small equipment related projects that are not covered by other capital programs. These projects are necessary to improve and maintain the integrity of substation equipment.

Estimated Completion Date:
This is an on-going program.

Status:
This is an on-going program.

Funding ($000):

Forecast 2009	Forecast 2010	Forecast 2011	Forecast 2012	Forecast Total 2009 - 2012
4,000	4,000	4,000	4,000	16,000

The following projects have been identified as candidates to be funded via this program. The total cost associated with all of the projects listed below is approximately $6.8 Million, so this list represents candidates for multiple years. We expect other projects similar to those listed below to emerge and be added to the candidate listing.

SUB-TYPE	LOCATION	DESCRIPTION	2008 COST ($)
Barksdale	Brownsville	Replace Feeder Alarm System	27,000
Barksdale	Fox Hills	Replace Low Pressure Alarm Switches	89,000
Barksdale	Greenwood	Replace Feeder Alarm System	56,000
Barksdale	HG, E 179th, Tremont & Parkchester	Replace Barksdale LP Switches	150,000

Substation Operations – 2009 Capital

SUB-TYPE	LOCATION	DESCRIPTION	2008 COST ($)
Barksdale	W. 65th St. S/S	Replace Barksdale Switches West 65th Street	150,000
Control	Ave. A S/S	Reconfigure Pt Source For 0 Volt. Crossing For Ctrl Circ. Cap Bank 3	50,000
Control	E. 13th St. S/S	Fiber Optic Upgrade	106,000
Control	Farragut S/S	Replace Potential Transformers	45,000
Control	Farragut S/S	Bus Section - Replace Degraded Coupling Capacitor	44,000
Control	Greenwood	Replace Potential Transformers	85,000
Control	Pleasantville	HMI Inverters	56,000
Control	Various	Install 125V DC Transfer Switch	35,000
Control	W. 19th St. S/S	ATS On Control Boards	40,000
Elec. Test	E. 179th St. S/S	Install Brimar Signs	20,000
Elec. Test	E. 179th St. S/S	Install High Voltage Test Room & Associated Test Boxes For HV Test Equipment	450,000
Elec. Test	Parkchester S/S	Install High Voltage Test Room & Associated Test Boxes For HV. Test Equipment	750,000
Elec. Test	Plymouth St. S/S	Install High Voltage Test Room & Associated Test Boxes For HV Test Equipment	450,000
Elec. Test	Various	Install Connect Boxes For Test Equipment	375,000
Eq. Struct.	Corona S/S	Upgrade Deteriorated Deluge Houses	475,000
Eq. Struct.	Millwood S/S	Stabilization Of Settling Disconnect Switch 1W1.	120,000
Eq. Struct.	Millwood S/S	Footing Of Lightning Arrestor On Bus Sec 1W (C Phase) Is Leaning	400,000
Eq. Struct.	Parkchester S/S	Water Intrusion Coating & Supporting Panels	146,000
Eq. Struct.	Queensbridge S/S	Install Roof Over L&P Transformer	75,000
Eq. Struct.	Various	Install Metal Enclosure On Diesel Generators	200,000
L&P	Willowbrook/Wainwright	Purchase Spare L&P Transformers	262,000
L&P	Millwood S/S	Connect 345kV DG To 138kV Load Boards	152,000
L&P	Murray Hill	Install Emergency Cbl Tie Bet. 120/208 Network & Ded. 13 kV Fdr & Tr.	10,000
L&P	Parkchester S/S	Install Emer. Feed Via ATS From Networks To Eliminate Running Diesel Gen When Feeder 7x89 Is OOS	20,000
L&P	Vernon S/S	Provide A Supply From The Network To Allow The Removal Of The L&P Supply From Rav Unit #10	400,000
Misc.	Bensonhurst & Brownsville	Provide Conduit, Cable, And New Radio Antennae.	750,000
Misc.	Bruckner	Retrofit G&T Device	30,000
Misc.	E. 75th St. S/S	Add 3 Single Phase Grd SW 38M35	275,000
Fire Prot	Astoria West S/S	Replace Fire Detection System	200,000
Fire Prot	Farragut S/S	Update Fire Pump Power Supply	150,000
Fire Prot	Millwood S/S	Replace Fire Protection System	70,000

Substation Operations – 2009 Capital

SUB-TYPE	LOCATION	DESCRIPTION	2008 COST ($)
Fire Prot	Queensbridge S/S	Install New Allison Fire Detection System	215,000
Fire Prot	Vernon S/S	Install New Allison Fire Detection System	250,000
Fire Prot	W. 65th St S/S	Replace Fire Protection System Piping and Sump Pump to Correct Flooding Condition	409,000
Safety	Astoria West S/S	Relocate DG Fuel Tank To Comply w/ FDNY Regulations	150,000
Safety	Dunwoodie	Install Bollards & Sign For Low Feeder Warning	100,000
Safety	Various	Install Metal Plating Between Capacitor Banks.	205,000

Substation Operations – 2009 Capital

Project/Program Title	SOCCS RTU Replacement
Status	Engineering / In-progress
Estimated Service Date	November 2006 to December 2010

Work Description:
This project will replace all the transmission Remote Terminal Units (RTU's) with new technology that supports communication with multiple systems, supports the modern protocols of the new Emergency Management System (EMS), and is more easily expandable.

Following procurement of the new EMS in late 2005 and commissioning of the first system at the Alternate Energy Control Center (AECC), we started a multi-year RTU replacement program for all transmission and generating stations. The selection of an open architectural communication protocol [DNP3.0] as the standard protocol for the system will facilitate the finalization of the technical specification to comply with the NERC Cyber Security Standard. Older RTU's at key stations in each borough will be replaced first. In the interim, these aging in-service RTU's are presently being outfitted with modified communication kits that will allow them to communicate with multiple masters [i.e.] the Energy Control Center (ECC) and the AECC.

Justification:
The Substation Remote Terminal Units (RTU) supply vital information and control capabilities to the Energy Control Center, enabling remote supervision of the system and remote control of station and feeder equipment. The RTU's installed in the late 1970's are reaching the end of their useful life. The existing proprietary communication protocols used by these station devices limit the speed of data transmission to 1200-baud modems and prohibit communication with other advanced substation devices. Complete replacement of all aging RTU's will ensure the supervisory and control capabilities of these substations can be expanded as well as facilitating expansion of the EMS functionality and realization of the full capabilities of the system.

Estimated Completion Date:
This multi-year project is scheduled to be completed by December 2010.

Status:
A purchase order was awarded for the 40 new RTU's including vendor installation. To date two (2) have been replaced. Not withstanding major delays, the project is scheduled to be completed by 2010.

Funding ($000):

Forecast 2009	Forecast 2010	Forecast 2011	Forecast 2012	Forecast Total 2009-2012
3,000	3,000	-	-	6,000

Substation Operations – 2009 Capital

Project/Program Title	Substation Automation - Target Information System (TIS)
Status	Engineering
Service Date	2012

Work Description:
The system is comprised of proprietary sensing and recording hardware for electrical parameters, standard off the shelf: fiber optic/digital data transmission equipment, computer hardware and proprietary software for data acquisition and analysis, and peripheral equipment for displaying the results.

The implementation of this system will require the installation of the proprietary non-intrusive Hall Effect clip on sensors and recorders for sensing AC and DC currents on existing electromechanical relay wiring, standard off the shelf temperature, and relative humidity sensors in substation relay panels and at breaker control cabinets.

A new fiber optic LAN Infrastructure and communication interface will be installed at Farragut substation. This will consist of fiber optic cables, data transmission cables, and media converters. This will enable the acquisition of electrical information from the sensors and recorders and route them from the various relay houses to within the substation control room, for data storage and viewing.

In the Farragut substation control room, smart data concentrators, Ethernet switches, and new computer servers will be installed to complete the system. The substation servers will be connected to a master server at 4 Irving Place using the corporate LAN. This will enable remote sharing of TIS information. User displays that are remotely viewable and cater to Operators, PST, and Engineers, will also be designed by the vendor and implemented as part of this project.

Justification:
The implementation of the Target Information System (TIS) will allow the existing electromechanical relay systems in the field to be retrofitted without any equipment outages. In essence, the electromechanical relays will gain the functionality of microprocessor relays, without the associated replacement costs.

This system will allow employees to remotely and accurately access real time electrical system parameters and also automatically receive reports by exception whenever there are problems on our electrical system.

Implementing this system will contribute towards meeting our enhanced reliability, safety, and equipment availability goals.

Estimated Completion Date:
To be completed by 2012.

Status:
With the procurement of the Farragut Substation TIS equipment Con Edison will implement TIS at Greenwood Substation in 2008 and Jamaica Substation for 2009. Protection Engineering and Protective Systems and Testing will determine the additional substations for 2010, 2011 and 2012.

Funding ($000):

Forecast 2009	Forecast 2010	Forecast 2011	Forecast 2012	Forecast Total 2009-2012
2,000	2,000	2,000	2,000	8,000

Substation Operations – 2009 Capital

Project/Program Title	East River Station Protection System Upgrade – Automation
Status	In-Progress
Estimated Service Date	2012

Work Description:
This project will purchase and install a new state-of-the-art microprocessor based automation system to perform operating, protective, and monitoring functions for the 69 kV circuit breakers, transformers, phase angle regulators, feeders, and buses at the East River Substation. This system will include approximately 58 new protective relay panels, a new operating console with monitors, control and supervisory equipment, and all associated peripheral and support systems including batteries, chargers, local-remote communications and station security. The new components will be installed in the recently completed control room in the 69 kV yard at East River thereby completing relocation of all operating, protective, and monitoring functions from the 8th floor of the East River generating station. The project will also retire in place the existing operating, control, and protective systems and devices, currently located in the generating station control room, terminal board room, and various relay rooms.

Justification:
This project will enhance system performance, improve operator response time and productivity, and upgrade the protection and control systems, thereby increasing reliability. The project is required to support the retirement of the existing operating, control, and protective systems and devices, currently located in the generating station control room, terminal board room, and various relay rooms.

Estimated Completion Date:
This project will be scheduled to be implemented over a seven (7) -year period with a 2012 service date.

Status:
In 2007, all control room and yard cabinets were installed as well as the tray work required for the routing of fiber optic cable through the yard area. This project will extend through 2012 to allow for sequencing of required outages and completion of associated upgrades at the 13th St. and Leonard St. Substations
During 2008 we intend to install all fiber optic cabling, connections and the commissioning of the control system in preparation for the 1st section outage scheduled for the fall 2008.

Funding ($000):

Forecast 2009	Forecast 2010	Forecast 2011	Forecast 2012	Forecast Total 2009 - 2012
3,500	3,500	3,100	2,520	12,620

Substation Operations – 2009 Capital

Project/Program Title	Buchanan Continuance
Status	Planning
Estimated Service Date	2013

Work Description:
The Buchanan Substation is over 40 years old and nearing the end of its useful life. As a result, the Company plans to start a multi-year program to upgrade the substation. The station is currently being expanded, for load relief purposes, with the addition of a third section of switchgear. The third section is of a double synbus arrangement, standard for all new substations, and space permitting, the intent is to replace the existing two sections with a similar arrangement. A study to evaluate the space availability and develop a replacement plan will be undertaken in 2008.

Justification:
The station was placed in service in 1960 and it is one of the few area stations with outdoor switchgear and underground protection and control equipment. Being an outdoor substation the weather has taken its toll on the equipment as well as its wiring. The ultimate plan is to upgrade the entire 13 kV switchgear, relay system, and control wiring.

Estimated Completion Date:
Typically an upgrade of this magnitude would take two to three years, but that will not be known until the type of upgrade has been finalized.

Status:
Study to be completed by the end of 2008.

Funding ($000):

Forecast 2009	Forecast 2010	Forecast 2011	Forecast 2012	Forecast Total
-	-	10,000	10,000	20,000

Substation Operations – 2009 Capital

Project/Program Title	East 179th Street Substation Continuance
Status	Planning
Estimated Service Date	2015

Work Description:
The East 179th Street Substation is over 40 years old and nearing the end of its useful life, and as a result the Company plans to start a multi-year program to upgrade the substation. The station is similar in design to the East 63rd Street Substation and the upgrade will most likely be similar. A study will be undertaken after the start of the East 63rd Street Station upgrade to capture any lessons learned from the E. 63rd upgrade.

Justification:
The station was placed in service in 1956 and it is one of the few area stations with outdoor switchgear and underground protection and control equipment. Being an outdoor substation the weather has taken its toll on the equipment as well as its wiring. The ultimate plan is to upgrade the entire 13 kV switchgear, relay system, and control wiring.

Estimated Completion Date:
Typically an upgrade of this magnitude would take four to five years, but that will not be known until the design / plans have been finalized.

Status:
Scope being developed

Funding ($000)

Forecast 2009	Forecast 2010	Forecast 2011	Forecast 2012	Forecast Total
-	2,500	5,000	5,000	12,500

Substation Operations – 2009 Capital

Project/Program Title	East 63rd Street Substation – Continuance Program
Status	Engineering
Estimated Service Date	2013

Work Description:
This project will enhance the reliability of the East 63rd Street Substation. The original plan was to perform upgrades similar to those at the Leonard Street Substation, however, based on experience with the Leonard Street upgrade, other options are being considered. A study is presently underway to evaluate the different upgrade options with results of this study expected by the end of the first quarter of 2008.

Justification:
The East 63rd Street Substation is over 40 years old and nearing the end of its useful life. The station was placed in service in 1959 and it is one of the few area stations with outdoor switchgear and underground protection and control equipment. Being an outdoor substation, the weather has taken its toll on the physical structures that house the equipment as well as its wiring. This project is necessary to ensure the continued reliable operation of the substation.

Estimated Completion Date:
Typically an upgrade of this magnitude would take four to five years. The current completion date is 2013. A more accurate date will be established following the selection of the upgrade options currently being evaluated and the development of a project schedule.

Status:
During 2008, Engineering will evaluate the various upgrade options and develop the conceptual design drawings, a scope of work, a milestone schedule, and the concept estimate. Engineering will also solicit design proposals for the East 63rd Street Substation upgrade project.

Funding ($000)

Forecast 2009	Forecast 2010	Forecast 2011	Forecast 2012	Forecast Total 2009-2012
5,000	5,000	5,000	5,000	20,000

Substation Operations – 2009 Capital

Project/Program Title	White Plains Substation Continuance
Status	In-Progress
Estimated Service Date	2009

Work Description:
White Plains is the second major rehabilitation site under the Substation Continuance program. This project was initiated in 2000 to upgrade the White Plains Substation. The substation was equipped with the original 1925 equipment and outdated support systems that were difficult to maintain. The site did not have any transformer oil containment or site drainage facilities. The majority of the substation work has been completed. What remains to be completed is replacement of the oil filled L&P transformer with a dry type, installation of additional HVAC equipment, and additional EMF shielding in transformer vault #2. Additionally, the construction of the new parking lot for the neighbor next door is required, which cannot be completed until the site is cleared of the MGP tank (2009).

Justification:
The reconstruction consists of four new transformers, associated switchgear and all electrical equipment. The work includes the expansion of the existing building, a new control room, oily water separator, and a modern substation automation system. To complete the project property, a parking lot belonging to the neighbor next door was utilized with the understanding that at the completion of the project we would construct a new parking lot on some of the vacated property that used to house the retired switchgear.

Estimated Completion Date:
Continuance work is slated for completion in 2009.

Status:
In 2007, work continued on completion of the substation. Installation and wiring of the sump pump was completed pending vendor hook up. The testing and training on the oil-water separator was completed. Facility upgrades were performed and all retirement work necessary to commence the MGP remediation was completed. During the course of the year, Engineering determined additional EMF shielding was required in Transformer 2 vault to conform to an agreement with the City of White Plains. Also, Engineering determined parts of the building did not have sufficient ventilation, so modifications were designed. Finally, for station reliability, the oil-filled L&P transformer will be replaced with a dry type due to its proximity to Transformer 4 secondary bus.

The planned work for 2008 includes completion of the sump pump, HVAC system upgrades, additional EMF shielding in Transformer 2 vault, replacement of the L&P transformer and MGP remediation work. Upon completion of MGP remediation in 2009, a new parking lot will be constructed for our neighbor, per the original Stipulation Agreement.

Funding ($000):

Forecast 2009	Forecast 2010	Forecast 2011	Forecast 2012	Forecast Total 2009-2012
550	-	-	-	550

Substation Operations – 2009 Capital

Project/Program Title	Parkchester Substation Continuance
Status	Planning
Estimated Service Date	

Work Description:
The Parkchester Substation is over 40 years old and nearing the end of its useful life and as a result the Company plans to start a multi-year program to upgrade the substation. Since the station has very little room available for a replacement program, besides determining the type of upgrade, we also need to develop how to best replace the existing equipment without impacting the reliability of the substation. We expect to commission a study sometime in late 2008.

Justification:
The station was placed in service in 1960 and it is one of the few area stations with outdoor switchgear and underground protection and control equipment. Being an outdoor substation the weather has taken its toll on the equipment as well as its wiring. The ultimate plan is to upgrade the entire 13 kV switchgear, relay system, and control wiring.

Estimated Completion Date:
Typically an upgrade of this magnitude would take four to five years, but that will not be known until the type of upgrade has been finalized.

Status:
Scope being developed.

Funding ($000)

Forecast 2009	Forecast 2010	Forecast 2011	Forecast 2012	Forecast Total 2009-2012
-	-	-	5,000	5,000

Substation Operations – 2009 Capital

Project Title	Substation Loss Contingency
Status	Engineering
Estimated Service Date	2012

Work Description:
Restoration plans have been created for the loss of individual substations. Key long lead-time spare parts will be procured consistent with the plans. The restoration plans consider the loss of a major substation, assuming damage similar to that resulting from the events of September 11, 2001.

The project includes the purchase of spare transmission equipment, such as cable sections, joints, pumping plants, and splices, and of substation equipment, such as portable relay panels, current transformers, and connecting hardware.

Justification:
This project will facilitate our capability to respond to load and transmission capacity lost in the event of a total loss of a transmission substation. Restoration plans and spare equipment will facilitate rapid restoration of the electric system.

Estimated Completion Date:
This is a multi-year project that is planned to continue to 2012.

Status:
Engineering will continue to develop specifications (as needed) for the restoration effort. Restoration equipment and materials (i.e. cable sections, joints, CCVT's, small control house, and battery, etc.) will be procured per engineering standards and specifications as defined by the plans.

In 2008, we intend to procure three (3) portable relay enclosures and the supporting materials to facilitate their installation when called for. The following materials and equipment are pending procurement:

- Portable Relay Protection Houses – self-contained on trailers including diesel generator, rectifier, and batteries
- Portable Relay Protection House – accessories box
- Relay Isolation Devices – flexitest switches
- Conductor #12 wire – twelve (12) 1000 ft. reels
- Single/multimode Fiber Optic Cable – 1000 ft. reels
- Communication Cable/Devices – 1000 ft. reels
- Portable Alarm Panels – self-contained alarm panels on wheels

Moving forward with the project, Engineering will develop specifications, wiring packages, and marked prints for the restoration plans. Connections will be installed that will allow for the periodic testing of the portable relay houses. A portable pumping plant will be purchased for pressurizing pipe type underground feeders. Split core current transformers and transition joints for solid dielectric to pressurized oil cable are being evaluated.

Substation Operations – 2009 Capital

Funding ($000):

Forecast 2009	Forecast 2010	Forecast 2011	Forecast 2012	Forecast Total 2009-2012
2,000	2,000	2,000	2,000	8,000

Substation Operations – 2009 Capital

Project/Program Title	Switchgear Enclosure Upgrade Program
Status	On-going
Estimated Service Date	On-going

Work Description:
This program will upgrade selected outdoor switchgear enclosures throughout the system by providing a weatherproof enclosure for switchgear cubicles.

Justification:
The switchgear cubicles in a number of substations require upgrading. These outdoor switchgear housings are typically about 40 years old. They have been weathered by the years of exposure to the elements. Their construction is typically a sheet metal enclosure resting on a concrete slab. Many steel components are corroded. The exterior doors no longer close and seal correctly. Many slabs are deteriorated and do not allow proper drainage accelerating corrosion of the housings. The roofs leak. The upgraded enclosures will reduce weather intrusion related trip outs, unscheduled outages, and alarms.

Estimated Completion Date:
This is an on-going program.

Status:
Engineering is developing construction packages for switchgear enclosures at eight (8) locations:

Bruckner	Granite Hill
Buchanan	Greenwood
E179th St.	Harrison
E75th St.	Plymouth St.

The planned work for 2008 includes installation of the Kemper Roofing system on the switchgear roof and bus work at Plymouth St. Substation. Work on the Buchanan switchgear improvements will commence depending on the release date of the Engineering package.

Funding ($000):

Forecast 2009	Forecast 2010	Forecast 2011	Forecast 2012	Forecast Total 2009-2012
500	500	500	500	2,000

Substation Operations – 2009 Capital

Project /Program Title	Technology Improvements
Status	On-going
Estimated Service Date	On-going

Work Description:
This program funds technology improvements needed to upgrade, enhance, automate, or establish Substation processes with the goal of increasing efficiency and improving reliability. Substation Operations has established numerous procedures, instructions, and guidelines to ensure the safe operation and maintenance of the equipment. Numerous processes developed to ensure adherence to a governing course of action involve data/information collection, transfer, and storage. As technology advances, this program serves to identify and take advantage of opportunities to improve the efficiency of these processes by implementing new tools or upgrading existing ones to enhance how data is collected, transferred, and/or stored.

Justification:
The implementation and upgrade of new technology is instrumental in ensuring Substation Operations continually improves efficiency and reliability. The use of technology to streamline processes results in better resource utilization and a reduction in task time requirements. Better data collection and storage facilitates enhanced data analysis and trending which ultimately leads to improved reliability and equipment performance.

Estimated Completion Date:
This is an on-going program

Status:
For 2008 and 2009, planned technology improvements include:

- Work permit improvements: expansion of the electronic work permit system to include mechanical and area work permits.
- Preventive Maintenance (PM) basis database: establishment of a database to record the technical basis for PM tasks and to ensure all PM requirements are implemented in the work management system
- Project prioritization: establishment of a database to assign priority and track progress of small capital projects
- PI data historian: establishment of a database to capture, record, and analyze system process data for the purpose of providing enhanced equipment monitoring capabilities

Future technology improvements include data integration enhancements and upgrades to the work management processes.

Funding ($000):

Forecast 2009	Forecast 2010	Forecast 2011	Forecast 2012	Forecast Total 2009-2012
705	500	500	500	2,205

Substation Operations – 2009 Capital

Project /Program Title	Security Enhancements
Status	On-going
Estimated Service Date	On-going

Work Description:
This program includes a number of projects to install or upgrade security systems at various substation locations.

The following locations require the installation of security cameras, a digital video recorder (DVR), a card access system and an intercom system to meet the minimum security standard:

Cedar Street	147th Street PURS	Woodrow
McLean Ave. PURS	Fox Hills	Sedgwick Ave. PURS
Ossining	W132nd Street	Wainwright
Brook Ave. PURS	Willowbrook	North Transition Station
Harrison	Bay Street PURS	

The following locations require security upgrades to include the installation of additional security cameras, a new digital video recorder (DVR), a card access system and a new intercom system:

Corona	E63rd Street	E. 75th Street
Gowanus	Bruckner / Hellgate	W. 100th Street
Jamaica	Goethals	Brownsville
Ramapo	Millwood	Eastview
Queensbridge	East Fishkill	Parkchester/ Tremont
W42nd Street	Pleasant Valley	Greenwood
Bensonhurst	Sprainbrook	
Washington Street	Sherman Creek	

This program will also upgrade the 450 MHz walkie-talkie radio system at 10 substations per year. The radio system has two primary functions. The man-down system is a safety feature installed in the radio that sends an alert when the radio remains in the horizontal position for more than 15 seconds. This feature is used by Station Operators when working in a station. The alert is sent to the Substation Operations Shift Manager. The second function of the radio systems is to provide a back-up means of communication to the Energy Control Center and Alternate Energy Control Center in the event of the loss of the telephone lines.

Justification:
The security upgrades at the listed stations are necessary to meet the minimum requirements of Con Edison Security Specification CE-ES-2002. This program will bring substation facilities into compliance with the existing specification. The man-down radio feature facilitates the ability to conduct one person switching operations thereby helping to reduce labor costs and improve operational response time. The upgrade will also improve the reliability of back-up communication.

Estimated Completion Date:
On-going.

Status:
The security upgrades at Goethals and Sherman Creek substations were started in 2007 and will be completed in 2008. The installation of a security system at Sedgwick Avenue PURS is scheduled to begin in March 2008 and will be completed by July 2008. Other planned

installations for 2008 include the following stations: Harrison, Cedar, Ossining, McLean Ave PURS, Brook Ave PURS and 147th Street PURS.

Planned upgrades for 2008 include Corona and Gowanus substations. Refer to the attached table for remaining candidate projects for 2009 through 2012

Funding ($000)

Forecast 2009	Forecast 2010	Forecast 2011	Forecast 2012	Forecast Total 2009-2012
4,100	4,000	4,000	4,000	16,100

Candidate Project List 2009 through 2012: This is the present planned work. Schedule is tentative and dollar amounts are in order of magnitude in the absence of detailed estimates.

Location	Installation	Upgrade	2009 $(000)	2010 $(000)	2011 $(000)	2012 $(000)
Fox Hills	x		$300			
Willowbrook	x		$300			
Millwood		x	$631			
North Transition Sta.	x		$103			
Jamaica		x	$900			
Ramapo		x	$1,000			
E.75th Street		x	$58			
W.110th Street		x	$58			
Woodrow	x			$316		
Wainwright	x			$316		
Sprainbrook		x		$270		
W.132nd PURS	x			$100		
Bay St PURS	x			$100		
Queens Bridge		x		$900		
Brownsville		x		$248		
W.42nd St		x		$1,000		
Bensonhurst		x			$800	
Washington Street		x			$650	
E.63rd Street		x			$800	
Bruckner/Hellgate		x			$1,200	
Eastview		x				$800
Greenwood		x				$500
Parkchester/Tremont		x				$550
East Fishkill		x				$800
Pleasant Valley		x				$800
VARIOUS	Upgrade DVR's to provide video to Security Operations Center		$200	$200		
Man Down Radios	10 stations/ year at $55,000 ea		$550	$550	$550	$550
TOTALS			$4,100	$4,000	$4,000	$4,000

Substation Operations – 2009 O&M

Project/Program Title	Bus Enclosure Reliability
Status	On-going
Estimated Service Date	2007-2012

Work Description:
Perform increased bus enclosure inspections as specified by Engineering on selected station phase bus to determine physical conditions. The scope of the work is for the preliminary testing to obtain what sections have higher potential rate of failures. Included in this inspection are cleaning and painting the interior of the bus enclosure, re-insulating the bus as required, re-silver plating bus connections, cleaning insulators, regasketing of bus enclosure plates and adding breathers to prevent moisture build up. A water proofing application will be applied to prevent flashover.

Justification:
Recent occurrences and station inspections have revealed an increase of water and moisture intrusion into the bus enclosures. Moisture ingress results in tracking across the bus insulation, rusting bolts, deteriorating silver plating on connections, the aluminum enclosure corroding and spalling (which flakes off and is conductive), and insulators becoming contaminated. This program will improve system reliability, reduce potential interruption to customers, avoid potential personal injury and major damage to equipment, and avoid a negative environmental impact.

Estimated Completion Date:
2007-2012 (on-going)

Status:
On-going

Funding ($000)

Historical Year 2007	Forecast RYE 2010	Forecast RYE 2011	Forecast RYE 2012	Forecast Total RYE 2010 - 2012
550	1,048	1,048	1,048	3,144

Substation Operations - 2009 O&M

Project/Program Title	Corrective Maintenance Normalization
Status	On-Going
Estimated Service Date	2010-2012 (on-going)

Work Description:

This program provides for labor, vendor parts and services for corrective maintenance of substation equipment / structures. Maintenance functions to be performed in future Rate Years are as follows: Transformer Overhauls, Type U Bushing change-outs, **Transformer** – gauges, indications, alarm panels, annuciator panels, throw over switches, diverters, fans, deluge systems. **Circuit Breaker**- gauges, racking mechanisms, auxiliary switches, control cabinet heaters, air leaks, PTZ devices. **Cubicle**-shutters, racking, OSHA ground studs, mimic panel, RMS coils. **Disconnect Switch** – hot spots, alignment of fingers, jaws, and blades, spring tension, lubrication, oxidation, electrical and manual motor operations.

Facility Maintenance - corrective maintenance on interior / exterior lighting, doors / locks, electrical wiring, heating, plumbing, fencing, concrete, trough covers and general facility house-keeping.

Justification:

These maintenance resources are normalization to the historic year which represents a return to O&M from Capital. The 2007 actual O&M expenditures were understated by $1.4 million related to a shift of maintenance labor and material costs required to support higher priority capital work.

These maintenance resources are required to maintain our continued high level of equipment availability and reduce facility maintenance backlogs to a manageable level to ensure the continued long-term reliability of the transmission and distribution systems.

In addition, Substation Operations currently has ninety- seven facilities that require dedicated maintenance to address our aging infrastructure and ensure a safe and productive working environment.

Estimated Completion Date:
2010 to 2012 (on-going)

Status:
On-going

Funding ($000)

Historical Year 2007	Forecast RYE 2010	Forecast RYE 2011	Forecast RYE 2012	Forecast Total
0	1,400	1,400	1,400	4,200

Substation Operations – 2009 O&M

Project/Program Title	Dynamic Feeder Rating System
Status	On-going
Estimated Service Date	On-going

Work Description:
Incremental O&M costs for vendor support for the maintenance of the Dynamic Feeder Rating (DFR) System.

DFR Systems consist of instrumentation installed on select feeder components to monitor parameters associated with transmission feeder thermal capabilities. This instrumentation includes remote terminal units that process various instrumentation inputs, communication systems that transfer the processed data and central processing units which control the system and provide the dynamic feeder ratings. In addition to the hardware, custom mathematical modeling and software development are required to maintain an operational system.

Justification:
Con Edison is expanding the capabilities of transmission feeders by installing DFR Systems, which will allow greater power transfers and provide greater operational flexibility for System Operations. The installation of this technology requires direct vendor support to properly maintain the existing and new systems. The Company currently plans to expand the implementation of DFR systems by one feeder per year. Estimated incremental vendor support costs are approximately $40k per year per feeder installation.

Estimated Completion Date:
On-going

Status:
On-going

Funding ($000)

Historical Year 2007	Forecast RYE 2010	Forecast RYE 2011	Forecast RYE 2012	Forecast Total RYE 2010 - 2012
85	215	255	295	765

Substation Operations – 2009 O&M

Project/Program Title	Field Operations Trainers
Status	On-going
Estimated Service Date	On-going

Work Description:
Resource requirements for three (3) new Field Operations Trainers that will be responsible for enhancing Substation Operations training criteria, maintaining training progress, working directly with new employees in the field, as well as with existing employees to update and maintain their annual and career track training requirements (3 Management Employees).

Justification:
The establishment of three new Field Operations Training positions is required to meet the growing demands of the new and existing Operations Personnel that operate and maintain Substations. These resources are required to ensure compliance with Corporate safety, health, and environmental programs, as well as operational and maintenance procedural requirements and the effective implementation of the Operator Excellence Program.

Substation Operations is currently in a facility expansion phase with as many as 12 new facilities coming onto the Con Edison system over a 10 year period. Concurrent with this system expansion the operating and maintenance force will be expanded with the addition of new employees. It is imperative for continued operational excellence that the operator training program be maintained at the highest standard of quality to address the dual challenges of maintaining the qualifications of the existing population of incumbent personnel as well as training and developing new hires. The establishment of a dedicated 3 person team will ensure a uniformed training curriculum, effective student / trainer interaction and enhance student proficiency in all aspects of operational preparedness.

System modifications to circuit breakers, supervisory alarm trip circuits, transformer cooling, remote monitoring systems, enhanced feeder processing methods, as well as communication protocols will be addressed as part of the operator training curriculum.

Estimated Completion Date:
On-going

Status:
On-going

Funding ($000)

Historical Year 2007	Forecast RYE 2010	Forecast RYE 2011	Forecast RYE 2012	Forecast Total FYE 2010 - 2012
-	154	154	154	462

Substation Operations – 2009 O&M

Project/Program Title	Staffing Augmentation for Existing Facilities
Status	On-going
Estimated Service Date	2008-2012

Work Description:
Operator staffing augmentation at existing substations is to support the installation of new equipment, and aggressive reliability and performance goals. Total increase in staffing at existing facilities is 16.

Southern Region (14):

Corona	- Increase staffing by 5 operators to support posting 1 additional operator round-the-clock
Bensonhurst	- Increase staffing by 5 operators to support posting 1 additional operator round-the-clock
Goethals	- Increase staffing by 4 operators to support posting 1 operator round-the-clock

Northern Region (2):

Various	- Increase staffing by 2 operators to support day watch to perform feeder processing, staff normally unmanned stations for upcoming projects, and perform training on newly installed equipment.

Justification:
Installation of additional equipment at existing stations to support customer demand growth in conjunction with the need to consistently meet aggressive feeder processing goals requires additional operator staffing. Additional resource needs are also created by the installation of the new rack-out type breakers which use a Ground & Test (G&T) device as part of feeder processing. Use of a G&T requires two-person switching versus one person with the old fixed position breakers. Rack-out type breakers are replacing the existing fixed-position breakers due to their fault interruption capability limitations (over duty).

In the Southern operating region examples of expansion of existing facilities that results in increased capacity and the need for additional operator coverage include the Glendale Substation where installation of a 4th transformer bank and associated 27KV bus sections and distribution feeder positions was completed in 2006. This increased capacity also increases demands on operators to process feeders. At Corona, North Queens and Jamaica Substations, the installation of the rack-out type breakers which use a G&T device has increased the level of operator coverage needed to efficiently support feeder processing.
Similarly in Brooklyn, equipment is being added to existing substations increasing capacity and operator support needs. For example, at the Water St Substation a 4th transformer bank, bus section and 10 distribution feeder breaker positions are being added to support customer demand growth. Other stations in Brooklyn have previously been retrofitted with rack-out type breakers and G&T devices. Increased operator coverage needs in Brooklyn will be supported through the augmentation of the Bensonhurst operator staffing.

Substation Operations – 2009 O&M

At the Woodrow, Willowbrook, and Wainwright Substations located in Staten Island, increased customer demand growth and the resulting increased feeder processing activity has also increased operator coverage needs. In these "open-air" stations use of a Live Line Tool is required which involves two-person switching. Increased operator coverage needs in Staten Island will be supported through the augmentation of the Goethals Station operator staffing.

In the Northern operating region examples of expansion of existing facilities that results in increased capacity and the need for additional operator coverage include the installation of Transformer #3 and associated 13kV switchgear section at Cedar St. Substation and the installation of new 13kV switchgear section at the Buchanan Substation. This increased capacity also increases demands on operators to process feeders.

As part of the breaker and disconnect switch program 345kV disconnect switches and breakers in East Fishkill, Pleasantville, and Ramapo S/S, which are normally unmanned stations, as well as 138kV disconnect switches in Dunwoodie, 179 St., Sherman Creek and Hellgate Substations will be replaced or overhauled. To increase station reliability we will be retrofitting the existing 13kV bus sections in the Washington St. Substations. In addition, installation of new equipment such as the fast fault clearing Basler relays require operator training. In order to conduct this training additional operating resources are required.

Estimated Completion Date:
On-going

Status:
On-going

Funding ($000)

Historical Year 2007	Forecast RYE 2010	Forecast RYE 2011	Forecast RYE 2012	Forecast Total RYE 2010-2012
-	1,760	1,760	1,760	5,280

Substation Operations – 2009 O&M

Project/Program Title	Facilities Betterment - Structural Integrity
Status	On-going
Estimated Service Date	Various 2008-2012

Work Description:
Substation Operations plans to implement various station betterment programs to address conditions requiring repair in order to maintain our facility's structural integrity at an appropriate standard of material condition. This program will address station and feeder tower painting; structural and equipment repair on the E13th St. Substation steel flight deck, concrete pads and footings, relay cubicles, trough covers, and substation walls.

Justification:
Incremental accounts payable costs to repair aging infrastructure, required due to the corrosive effects of time and weather on substation facilities.

Estimated Completion Date:
2008 – 2012 (On-going)

Status:
On-going

Funding ($000)

Historical Year 2007	Forecast RYE 2010	Forecast RYE 2011	Forecast RYE 2012	Forecast Total RYE 2010-2012
-	2.475	2,320	2,000	6,795

CONSOLIDATED EDISON COMPANY OF NEW YORK, INC.
CAPITAL AND O&M
SYSTEM AND COMPONENT PERFORMANCE
SYSTEM AND TRANSMISSION OPERATIONS

DESCRIPTION	Page #
Reference Transmission Operations - Capital - IIP- 4	
179th St-Reinforcement - M29 (Includes Academy)	2
Sprain Brook - W 49th St-Feeder M51	4
Cable System Enhancement - Pothead Alarms	5
Replace 69M43/69M44 With 38M53 & 38M54	6
Reinforce Hudson River Crossing Towers	7
Replace 138kV Feeders 18001 & 18002	8
Emergent Transmission Reliability	9
Replace Feeder 69M41 & 69M45	10
Re-Conductor Dunwoodie – Sprain Brook Transmission Corridor	11
Manhattan-Replace 69kV Feeders On QBB	12
Feeder 34182/4	13
Staten Island-Feeders 38R51 And 38R52	14
Transmission Feeder Failures	15
Upgrade Overhead 345kV Transmission Structures	16
Staten Island-M-Line Tower Relocation	17
Reference System Operations - Capital - IIP- 9	
Add Diesel Generator	18
East Control Room Renovations	19
HVAC Upgrade - East Computer Room	20
Computer Room Renovation	21
ECC/AECC Facility Security Enhancements	22
Training Area Expansion	23
Operator Console Replacement	24
ECC UPS Battery Replacement	25
Reference System & Transmission Operations - O&M - IIP-5	
Coating Refurbishment	26
Conductor Repairs	27
ECC Facility Maintenance Costs	28
ECC Trainer / Compliance Monitor Position	29
Feeder Emergencies	31
Install Bird Discouragers On Selected Portions of P & F Line	32
Normalized Human Resources	33
Overhead Line Inspections	34
Tower Painting	35
Transmission Planning Studies	36
Transmission Reliability - Industry Group Fees	37

Transmission Operations - 2009 Capital

Project/Program Title	179th St. - Reinforcement – M29 (Includes Academy)
Status	Engineering & Construction
Estimated Service Date	Pre-summer 2011

Work Description:
The objective of this project is to install a new 345 kV feeder from the Sprain Brook 345 kV Substation to the Sherman Creek Switching Station.

The M29 project consists of a 500 MW, 345 kV underground fluid-filled pipe-type cable, approximately 9.5 mile long that spans from the Sprain Brook 345 kV Substation to the new Academy 345kV Substation to be constructed on the former generating station site adjacent to the Sherman Creek 138 kV Substation. Interconnection at Sprain Brook is to be effected by terminating M29 into an available position in Bay #2, where it will be bounded to the north by the existing center breaker RNS2 (separating it from Feeder Y49), and to the south by two new 63 kA breakers separating it from the south sync-bus.

The Sherman Creek 138 kV Substation currently consists of two ring buses, an East and a West ring, joined by a short cable and breaker. The interconnection scheme at Sherman Creek provides for bifurcation of M29 to avoid a single point of injection into the 138 kV Substation. For enhanced reliability and ease of maintenance, each leg will be separated from the main 345 kV feeder via a 345 kV breaker and terminated into a separate ring bus through a 345/138 kV autotransformer in series with a 138 kV phase angle regulator (PAR). The autotransformers, PARs, and GIS (Gas Insulated Station) with two 63 kA breakers will be installed at the new Academy Substation, which will be constructed at the former Sherman Creek generating station south of the Sherman Creek Switching Station, to accommodate feeder terminations.

Justification:
The East 179th Street load area is that part of the Con Edison In-City system supplying the Bronx and Upper Manhattan area stations, whose aggregate summer peak load demand approaches 1250 MW over the next ten-year period beginning 2005. Currently the East 179th Street area is a single contingency design. However, reliability studies have shown that transmission feeders in the area would be overloaded above Normal ratings following the contingency loss of Feeder X28, the largest transmission feeder into the area that emanates from Sprain Brook. Until a permanent solution is engineered and implemented, operational protocols are in effect to mitigate these overloads, and maintain reliability.

Feeder M29 will provide sufficient additional transmission capacity to the East 179th load area to satisfy its single contingency design requirement and will provide additional margin to approach its second contingency design capability over the next ten years. As compared to other potential transmission solutions, Feeder M29 directly benefits Sherman Creek by providing the local area station with an additional supply source. Without M29, future load growth could easily absorb the small margin above second contingency capability currently afforded by this particular station. The installation of Feeder M29 would ensure that Sherman Creek has sufficient margin to maintain close to second contingency capability in the long term. Feeder M29 will also benefit the Dunwoodie North load area, an area electrically interconnected to the East 179th Street that is also projected to have a significant load growth. M29 would elevate Dunwoodie North's current single contingency design capability to a second contingency capability beyond the ten-year planning horizon.

Transmission Operations - 2009 Capital

Feeder M29 by virtue of its origination at Sprain Brook (outside of the In-City System) and termination at Sherman Creek (located within the In-City System electrical boundary), will become part of the New York City Cable interface, thus increasing overall transfer capacity into New York City by approximately 350 MW. This increase in transfer capacity will enhance the reliability of the overall In-City System.

Estimated Completion Date:
The projected service date is pre-summer 2011.

Status:
Article VII application was submitted to the PSC on 6/14/06 and a supplement was filed on 8/7/06 to include the Academy Substation building. The application was later amended to reflect the decision to cross the Harlem River via a tunnel (instead of HDD - Horizontal Directional Drilling). Evidentiary hearings were completed on 3/19/07 and the Administrative Law Judge issued his Recommended Decision on 5/30/07. PSC issued the Article VII Certification and approved construction at Sprain Brook and Academy on 8/23/07. Construction of the transmission (excluding tunnel) was approved on 12/13/07. Approval of the tunnel is pending submission of finalized drawings including information associated with the head house adjacent toe tunnel shaft in the Bronx.

Funding ($000)

Forecast 2009	Forecast 2010	Forecast 2011	Forecast 2012	Forecast Total 2009-2012
130,000	75,000	15,000	0	220,000

Transmission Operations - 2009 Capital

Project/Program Title	Sprain Brook – W. 49th St. - Feeder M51
Status	Engineering and Design
Estimated Service Date	December 2008 and following

Work Description:
The proposed project involves the replacement of one or more targeted sections (between two manholes) of cable on Feeder M51. The sections selected for removal and examination will be based on the results of dynamic simulation software. If further software modifications are required, the selection of the replacement sections will be more random in nature, with a focus on removing Anaconda cable, which has experienced recent failures. The removed sections will be examined in the field for abnormality, particularly for signs of thermo mechanical bending (TMB) development. Following the field examination, several samples of the cable will be selected for detailed laboratory dissection and analysis. In addition to aiding the development of the dynamic simulation software, the analysis of the removed sections will be used to study whether there is a generic problem with this cable type on Feeder M51.

Justification:
Feeder M51 has experienced 6 cable failures since 1999. Four of these failures occurred on cable sections (i.e. cable located between manholes) and are attributed to TMB. To date no reliable and proven technique is available to determine whether or not this failure trend will continue. The scope of this project entails the continued development of the computer software for the Dynamic Modeling and Simulation of the feeder. The results of the simulation will be compared to historical failures for purposes of verifying the model. If successful, the model will be used to rank all sections relative to the possibility of future failures. The section identified as being the most prone to a potential future failure will then be removed for inspection. The inspection of the removed section will aid in verifying the accuracy of the simulation program and provide a sample to make a qualitative assessment of the condition of the feeder.

Estimated Completion Date:
First cable section is scheduled to be removed in the fourth quarter of 2008.

Status:
The work on the Dynamic Modeling and Simulation of the feeder is underway. Preliminary results are expected in the first quarter 2008. Results will be verified against known cable failure points and if needed appropriate improvements to the program will be implemented. When satisfactory results are obtained, the section identified as being the most prone to a potential future failure will then be replaced.

Funding ($000)

Forecast 2009	Forecast 2010	Forecast 2011	Forecast 2012	Forecast Total 2009-2012
6,700	6,700			13,400

Transmission Operations - 2009 Capital

Project/Program Title	Various - Cable System Enhancement – Pothead Alarms
Status	Construction
Estimated Service Date	2011

Work Description:
The scope of this long-term project is to install Barksdale high and low pressure switches on 6 remaining sets of potheads that are not equipped with the system. This installation will allow for monitoring oil pressure in the pothead assembly and provide remote alarm of high and low pressure conditions. This will allow action to be taken before pothead and feeder damage occurs. Control conduit and wiring will also be installed to connect the pressure assembly to either the control room, another pothead alarm assembly, or to the pump house alarm board, depending on the station.

Justification:
Loss of pressure to the pothead can result in catastrophic failure. A pressure-monitoring device can alert the operators to a loss of pressure and allow operators to take corrective action prior to the failure of the pothead. This is a system enhancement project.

Estimated Completion Date:
2011

Status:
6 Pothead Alarm Systems remain to be installed.

Funding ($000)

Forecast 2009	Forecast 2010	Forecast 2011	Forecast 2012	Forecast Total 2009-2012
500	500	500	-	1,500

Transmission Operations - 2009 Capital

Project/Program Title	Various - Replace 69M43/69M44 with 38M53 & 38M54
Status	Construction
Estimated Service Date	May 2009

Work Description:
This project will replace the two existing 69 kV, 350 kcmil three conductor, low-pressure fluid filled double circuit cables with 138 kV solid dielectric insulated cables. These feeders connect the East 13th Street substation to the Cherry Street Substation. The new feeders will consist of approximately 2 miles of new duct bank installed along a different route than the existing feeders. The related equipment at both substations will be upgraded or replaced to 138 kV.

Justification:
There will be enhanced reliability and reduced environmental exposure. The existing feeders have been in service since the 1950's and the condition of the ducts as well as the cable has been deteriorating. Since 2000, these feeders have experienced 7 dielectric fluid leaks.

Estimated Completion Date:
May 2009.

Status:
The street portion of the duct bank installation work from Cherry Street to the East 13th Street substations is complete. The cable pulling and splicing for the street sections is complete. The station work and termination sections on Feeder 38M54 will be completed in 2008. Station work which includes the duct bank installation and cable terminations for Feeder 38M53 is scheduled for completion in May 2009.

Funding ($000)

Forecast 2009	Forecast 2010	Forecast 2011	Forecast 2012	Forecast Total 2009-2012
3,000	-	-	-	3,000

Transmission Operations - 2009 Capital

Project/Program Title	Reinforce Hudson River Crossing Towers
Status	Planning (Design)
Estimated Service Date	2011

Work Description:
Upgrade river crossing towers that support 345kV feeders Y88 and Y94 over the Hudson River between Cortlandt and Stony Point. This will be achieved by installing additional structural steel members to increase the strength of these structures. The existing material lifts will be replaced as well.

Justification:
Recent engineering analysis of these structures indicates that numerous members are significantly overloaded under various load cases. In 1997 the Cortlandt tower was heavily reinforced at the top bridge after a severe structural failure occurred, causing Y88 to remain out of service for approximately one month, and nearly causing the complete failure of the 473' tall tower. Subsequent to this repair additional reinforcing was also installed on the Stony Point tower. The most recent engineering analysis indicates that the towers need to be upgraded in order to meet time of construction and current National Electric Safety Code and Con Edison design criteria. The material lifts need to be replaced to facilitate access for routine inspection and maintenance.

Estimated Completion Date:
2011

Planning and Budgeting:
Design in 2008 and purchase initial material. Install tower upgrades between 2009 and 2011.

Status:
Planning

Funding ($000)

Forecast 2009	Forecast 2010	Forecast 2011	Forecast 2012	Forecast Total 2009-2012
3,000	2,400	1,800	-	7,200

Transmission Operations - 2009 Capital

Project/Program Title	Replacement of Feeders 18001 & 18002
Status	Planning
Estimated Service Date	2010 & 2011

Work Description:
Feeders 18001 and 18002 are the next feeders to be replaced under the Feeder Replacement Program. The Feeder Replacement Program replaces, in an orderly manner, the underground pipe-type and self contained fluid filled cables that have over 50 years of service and have experienced operational problems such as dielectric fluid leaks and failures.

These feeders are pipe-type feeders which were energized in 1949 and are among the oldest cables on our system. There have been 14 dielectric fluid leaks on these feeders, several of which have resulted in significant releases of dielectric fluid. There have also been a total of thirteen failures on these two feeders including five on Feeder 18001 and eight on Feeder 18002. A combination of nine failures and leaks has occurred since 2000. Considering the age, the environmental impact of potential leaks and recent service history, these feeders have been chosen for replacement with solid dielectric cable to improve service reliability.

To minimize installation costs and complications associated with obtaining a new feeder route, the new solid dielectric cables will re-utilize the existing steel pipes as conduits after removal of the old HPFF pipe-type cables. The new solid dielectric cable installation will also require the removal of some old manholes and the installation of new manholes for each of the two parallel feeders.

Work is planned to be replace Feeders 18001 & 18002 sequentially so that only one feeder is out of commission at any one time.

The cost effectiveness of this solution will be evaluated against new solid dielectric feeders in a double feeder duct bank when detailed engineering is conducted.

Justification:
Reliability enhancement, elimination of potential future dielectric fluid leaks. This is a system enhancement project.

Estimated Completion Date:
May 2010 (18001) and May 2011 (18002).

Status:

Planning

Funding ($000)

Forecast 2009	Forecast 2010	Forecast 2011	Forecast 2012	Forecast Total (2009-2011)
21,000	30,000	20,000	0	71,000

Transmission Operations - 2009 Capital

Project/Program Title	Various - Emergent Transmission Reliability
Status	Planning
Estimated Service Date	On-going

Work Description:
The growing level of feeder failures over the past several years highlights the importance of addressing reliability issues within the transmission system. From 1999-2006, of the 58 repair efforts, a total of 25 repairs have been extensive enough to require capitalization. This program will provide funding to address emergent reliability issues impacting transmission system reliability.

Justification:
This project is initiated to address emerging issues that affect the reliability of the transmission system.

Estimated Completion Date:
Projects will be determined based upon annual review of feeder operations.

Status:
Planning

Funding ($000)

Forecast 2009	Forecast 2010	Forecast 2011	Forecast 2012	Forecast Total 2009-2012
10,000	10,000	10,000	10,000	40,000

Transmission Operations - 2009 Capital

Project/Program Title	Various – Replace Feeders 69M41 and 69M45
Status	Planning
Estimated Service Date	2013

Work Description:
Feeder 69M41and 69M45 are high-pressure fluid filled pipe-type feeders connecting E 13th St. Substation to Cherry St. Substation. These feeders have been in service since the early 1950's and are among the oldest feeders in the Con Edison Transmission System. Although these feeders have had few leaks, there are areas of Feeder 69M41 where, if a leak were to occur, it would require a major undertaking to repair. These are the sections under the FDR Drive where the feeder pipe is directly buried in the roadbed. Taking this into consideration, as well as the more than 55 year of service and the fact that the 5" pipes cannot be re-conductored with solid dielectric cables, it is recommended that the feeders be replaced with solid dielectric cables in a new FRE (Fiberglass Reinforced Epoxy)/concrete duct bank.

Justification:
Reliability will be enhanced by the elimination of possible dielectric fluid leaks and the reduction of cable failures. The feeder will be re-conductored with 138 kV cabling to permit future conversion.

Estimated Completion Date:
2013

Status:
Planning

Funding ($000)

Forecast 2009	Forecast 2010	Forecast 2011	Forecast 2012	Forecast Total 2009-2012
-	-	6,000	18,000	24,000

Transmission Operations - 2009 Capital

Project/Program Title	Various – Re-Conductor Dunwoodie - Sprain Brook Transmission Corridor
Status	Planning
Estimated Service Date	2011

Work Description:
Replace the compression fittings and conductor on overhead 138kV feeders 99941 and 99942 on the E Line between Dunwoodie and Sprain Brook substations and replace the compression fittings and conductor on 345 kV feeders 75L and 75M on the K line between Dunwoodie and Sprain Brook substations.

Justification:
Feeders 99941 and 99942 consist of single-wire bundle 2156 MCM ACSR (aluminum conductor steel reinforced) and 75L and 75M consist of double-bundle 795 MCM ACSR. Each of the 138 kV feeders, which are approximately 1.5 miles in length, was installed in 1965. Significant problems with compression fittings have surfaced on these feeders. Three dead end fittings operating at high temperatures and detected by thermographic inspection were replaced in 2006. Subsequent testing at The National Electric Energy Testing, Research and Applications Center (NEETRAC) indicated that the fittings were either at end-of-life or could reasonably be expected to be at end-of-life in the near future. Engineering has evaluated both lines and has recommended that the supply conductors be replaced because of problems with the fittings and the relatively short length of each feeder.

The use of a new, high temperature, high capacity ACSS (aluminum conductor steel supported) conductor will be evaluated as a possible replacement for the existing conductor. This would be the first use of ACSS on Con Edison's system. ACSS may have future applications in situations where lower sag, higher temperatures, and/or higher capacity is required, and experience with it will be valuable. In addition to replacing the conductors, shield wire, fittings, insulators and support hardware will be replaced.

Estimated Completion Date:
2011

Status:
This project was included in the 2008 Rate Case submittal and completion dates are feeder outage dependent.

Funding ($000)

Forecast 2009	Forecast 2010	Forecast 2011	Forecast 2012	Forecast Total 2009-2012
1,500	4,000	4,000	-	9,500

Transmission Operations - 2009 Capital

Project/Program Title	Manhattan – Replace 69 kV Feeders on QBB
Status	Engineering
Estimated Service Date	December 2012

Work Description:
The proposed project involves the replacement of six 69 kV, high-pressure gas-filled (HPGF) feeders with solid dielectric cable on the Queensboro Bridge between Manhattan and Queens. The scope includes the removal of the existing pipes and cables and installation of new pipes on the bridge and up the bridge risers, installation of new solid dielectric cables across the bridge span and up the risers, installation of cable anchor joints on top of both piers, and the installation of transition joints on each side of the bridge near the base to make the connection between solid dielectric and gas-filled cables.

The current plan is to replace the first two of the six feeders by December 2012. Options for the replacement of the remaining four feeders, including replacement of the bridge portion and possibly complete land section will be subsequently evaluated to determine the best option for the remaining four feeders.

Justification:
69 kV feeders 69M01-69M06 (six feeders), consist of high-pressure gas-filled cables in pipes which are physically located under both outer roadways of the Queensboro Bridge – three feeders under the northern outer roadway and three feeders under the southern outer roadway.

Corrosion of the pipes has resulted in a number of leaks over the years. Accessing the pipes on the bridge for repairs is difficult and in some instances has prevented repairs altogether. Although pipes of these feeders have been repaired in the past, some leaks remain due to the extensive corrosion of the pipes. Areas of On-going corrosion activity could further breach the pipe wall and accelerate the leak rate to the point where feeder reliability could be affected. This is a system enhancement project.

Estimated Completion Date:
December 2012

Status:
A first phase cable replacement design has been selected. It consists of the replacement of two outer feeders under the northern roadway of the bridge – feeders 69M06 & 69M01. The installation will include pulling new solid dielectric cables across the bridge span and up the risers. Each new solid dielectric cable circuit across the bridge will be installed in a new fiberglass reinforced epoxy pipe. Anchor joints will be installed on top of the bridge piers on both sides of the bridge. Solid Dielectric to HPGF cable transition joints will be installed on each side of the bridge on both circuits.

Funding ($000)

Forecast 2009	Forecast 2010	Forecast 2011	Forecast 2012	Forecast Total 2009-2012
-	3,000	14,000	13,000	30,000

Transmission Operations - 2009 Capital

Project/Program Title	Various - Feeder 34182/4
Status	Planning
Estimated Service Date	2013 and 2014

Work Description:
These pipe-type feeders were energized in 1949 and are among the oldest cables on our system. Considering the age of these feeders, and the environmental impact of potential leaks, these feeders have been chosen for replacement with solid dielectric cable.

To minimize installation costs and complications associated with obtaining a new feeder route, the new solid dielectric cables will re-utilize the existing steel pipes as conduits after removal of the old HPFF (High Pressure Fluid Filled) pipe-type cables. The new solid dielectric cable installation will also require the removal of some old manholes and the installation of new manholes for each of the two parallel feeders.

Work is planned to be executed on Feeders 34182 & 34184 sequentially so that only one feeder is out of service at any one time.

The cost effectiveness of this solution will be evaluated against new solid dielectric feeders in a double feeder duct bank when detailed engineering is conducted.

Justification:
Reliability enhancement, elimination of potential future dielectric fluid leaks. This is a system enhancement project.

Estimated Completion Date:
May 2013 (34182) and May 2014 (34184)

Status:
Planning

Funding ($000)

Forecast 2009	Forecast 2010	Forecast 2011	Forecast 2012	Forecast Total 2009-2012
-	-	5,000	20,000	25,000

Transmission Operations - 2009 Capital

Project/Program Title	Various - Feeders 38R51 and 38R52
Status	Planning
Estimated Service Date	2013

Work Description:
Feeders 38R51 and 38R52 are 138kV medium-pressure dielectric fluid filled feeders connecting the Fresh Kills Substation to the Wainwright Substation. Wainwright Substation is a two bank area station and the loss of either feeder places the station in a system contingency condition.

These feeders have been in service since the mid 1970's and are the only two medium-pressure feeders installed on the Con Edison Transmission System.

The scope of work would be to install fiberglass reinforced pipes and concrete encased duct bank from the West Shore Expressway to the Wainwright Substation. The plan in the event of a system contingency would be to expedite the replacement of the medium pressure cables by installing new solid dielectric cables into the manhole duct bank constructed under this project and connecting them to existing feeders.

Justification:
This is a system reliability project, focused on the mitigation of potential cable damage caused by outside parties or other third party concerns which may result in a failure and possible loss of the Wainwright Substation. The feeder to the Wainwright Substation are direct buried, share a common trench and are susceptible to third party dig-ins. Damage to both cables in the trench could potentially cause the loss of the Wainwright Substation and approximately 25,000 customers.

Estimated Completion Date:
2013

Status:
Planning

Funding ($000)

Forecast 2009	Forecast 2010	Forecast 2011	Forecast 2012	Forecast Total 2009-2012
-	-	4,000	13,000	17,000

Transmission Operations - 2009 Capital

Project/Program Title	Various - Transmission Feeder Failures
Status	Construction
Estimated Service Date	On-going

Work Description:
The objective of this program is to provide sufficient funds for the repair of transmission feeders when the repair requires a complete cable section replacement between manholes or if requires pothead replacement.

Justification:
This program establishes a capital funding to address major transmission repairs. While funding for transmission feeder repairs is provided in the O&M program, the cost of extensive repairs are covered through the capital program. Based on recent history, the number and cost of transmission repairs has increased. This program will maintain transmission system reliability.

Estimated Completion Date:
On-going

Status:
Construction

Funding ($000)

Forecast 2009	Forecast 2010	Forecast 2011	Forecast 2012	Forecast Total 2009-2012
5,000	5,000	5,000	5,000	20,000

Transmission Operations - 2009 Capital

Project Title	Upgrade Overhead 345kV Transmission Structures
Status	Planning and design
Estimated Service Date	On-going

Work Description:
This project provides for upgrades on specific 345 kV steel lattice towers selected based on engineering analysis. The reinforcement of these towers shall decrease the likelihood of tower failure during weather events or terrorist acts. In addition, selective reinforcement, particularly on towers supporting the six 345kV lines south of Millwood Substation, will serve to decrease the possibility of a failure at one tower causing cascading failures at adjacent towers on these critical lines. Work shall initially start on the lines that contain the most dead-end type structures so that they may be converted to a self-supporting structure.

Justification:
Upgrading existing structures will reduce potential tower failures, thus reducing operating constraints and improving reliability. While Con Edison has eight single circuit guyed aluminum lattice structures available for emergency use following the loss of a tower or multiple towers, these may not be sufficient in a weather event or terrorist event where many double circuit structures would be damaged. Through selective reinforcement of towers, this project shall decrease the likelihood and impact of multiple failures resulting from cascading since reinforced towers are better able to withstand the loads that would result from adjacent tower failure.

Estimated Completion Date:
On-going

Status:
The project is at the stage of planning and design. Project completion is outage dependent since some structural members requiring replacement support the existing supply conductors and require the feeder to be de-energized and grounded before work may proceed.

Funding ($000):

Forecast 2009	Forecast 2010	Forecast 2011	Forecast 2012	Forecast Total 2009-2012
2,100	2,200	2,300	2,400	9,000

Transmission Operations - 2009 Capital

Project/Program Title	Staten Island - M-Line Tower Relocation
Status	Planning
Estimated Service Date	2010

Work Description:
A property owner, Vanbro Concrete, installed a railroad spur for their concrete yard. They remain in lease negotiations with New York City. Con Edison is a tenant on the NYC property. Con Edison sent correspondence to NYC indicating that these construction costs are the responsibility of the owner. Reimbursement is expected, however, it is possible Con Edison may be responsible for the costs after negotiations and possible litigations are complete. Therefore, continued funding is being requested for this project.

Justification:
The two outer phases of Feeder 22 must be raised with a new transmission structure. The conductors must be raised to comply with National Electric Safety Code and permit 20' high trains to pass. The installation costs include special site requirements involving the existing operational railroad and tidal wetland restrictions.

Estimated Completion Date:
The project shall be designed in 2008 and is outage dependent.

Status:
This project was included in the 2008 Rate Case submittal and is outage dependent. The planning efforts are continuing.

Funding ($000)

Forecast 2009	Forecast 2010	Forecast 2011	Forecast 2012	Forecast Total 2009-2012
1,500	1,500	-		3,000

System Operation – 2009 Capital

Project/Program Title	ECC – Add Diesel Generator
Status	Engineering
Estimated Service Date	June 2009

Work Description:
Add additional 500kW diesel generator to support increased load needs. Upgrade the existing switchgear as required and expand the load boards to support the additional load capacity.

Justification:
The ECC needs to be able to operate at full capacity under all circumstances. The current facility loading including the control room air-conditioning exceeds the capacity of a single unit, which, during a contingency, could subject the computer equipment to failures. The addition of a third unit supports this requirement. Early analysis indicated that replacing the two 500kW units with larger units was not feasible.

Estimated Completion Date:
June 2009.

Status:
Work start currently planned for 2008 and 2009.

Funding ($000)

Forecast 2009	Forecast 2010	Forecast 2011	Forecast 2012	Forecast Total 2009 - 2012
500	-	-	-	500

System Operation – 2009 Capital

Project/Program Title	ECC - East Control Room Renovations
Status	
Estimated Service Date	June 2009

Work Description:
Change the overall lighting in the District Operators control room to support the new projection screen wall being installed with the new Emergency Management System (EMS). This change will also change the control room layout providing a design which improves operator efficiency and allows for expansion of operating positions. Overall, the new design will improve the overall control room environment and will provide optimal viewing and working conditions for all operators.

Justification:
The addition of projection walls, needed changes to the working arrangement, and inefficiencies in the existing lighting scheme necessitate the redesign and replacement of the system to provide the best environment for working and viewing the various display systems deployed throughout the control room. The new EMS system includes a sixty-five foot projection wall and different computer monitors, each of which will alter the lighting needs of the control room. A modern lighting design would provide more flexibility of lighting level in different areas of the room. The operator positions will be re-arranged, allowing for expansion to suit the growing needs of the operation. This change will enhance the operating environment.

Estimated Completion Date:
June 2009

Status:
Room layouts have been finalized, and will be placed for bid during second quarter of 2008. Construction needs to align with the EMS project schedule with construction starting late in the fourth quarter of 2008. Project funding shifted from 2008 to 2009 to match project schedule.

Funding ($000)

Forecast 2009	Forecast 2010	Forecast 2011	Forecast 2012	Forecast Total
3,000	-	-	-	3,000

System Operation – 2009 Capital

Project/Program Title	ECC – HVAC Upgrade – East Computer Room
Status	Engineering
Estimated Service Date	December 2009

Work Description:
Replace the Liebert A/C units that support the main computer room at the ECC. The new units will be integrated into the proposed redesign of the computer room.

Justification:
The existing units have been in service for over 20 years. Major retrofits and control circuitry replacement over the years allowed these units to operate beyond their normal life expectancy. Plans to reconfigure the main computer room into smaller computer rooms for security and separation of critical infrastructure will require changes to the air conditioning system. This replacement will be coordinated with these changes.

Estimated Completion Date:
December 2009.

Status:
Design will begin after the computer room redesign effort starts.

Funding ($000)

Forecast 2009	Forecast 2010	Forecast 2011	Forecast 2012	Forecast Total 2009 - 2012
500	-	-	-	500

System Operation – 2009 Capital

Project/Program Title	ECC - Computer Room Renovation
Status	
Estimated Service Date	December 2012

Work Description:
Convert the main computer room from a single large area into multiple smaller computer rooms to separate and secure the critical computer systems in the Energy Control Center. Replace the HALON fire detection system with the newer approved systems currently used in computer areas.

Justification:
The project to replace the existing legacy Energy Management System will allow for better and more efficient use of computer rooms. Control Center computer systems need to be protected and redundant systems isolated to maintain a high level of reliability. Facility space combined with the largess of legacy systems had created the need to locate equipment in rooms outside of the main computer area in order to provide the isolation desired. The size of the newer system will allow us to locate multiple protected computer rooms in a single secured area. This will allow for easier access by authorized personnel and the most effective monitoring of the systems. The outdated HALON systems will also be replaced with the currently approved fire suppression systems for computer areas.

Estimated Completion Date:
December 2012.

Funding ($000)

Forecast 2009	Forecast 2010	Forecast 2011	Forecast 2012	Forecast Total 2009 - 2012
-	-	500	1,000	1,500

System Operation – 2009 Capital

Project/Program Title	ECC - ECC/AECC Facility Security Enhancements
Status	Planning
Estimated Service Date	December 2010

Work Description:
This project will add, as required, new and improved physical security systems to the Energy Control Center and Alternate Energy Control Center. This will include items such as card access, security cameras, biometrics or automated applications to monitor security.

Justification:
The control centers provide an essential service, each having full remote control capability of the electric and steam systems. Physical security systems must be maintained and levels that provide proper access control and allow for both local and remote monitoring. In addition, NERC (The North American Reliability Council) policies require specific levels of physical security for critical cyber locations, which this project will address as necessary.

Estimated Completion Date:
December 2010.

Status:
Planning.

Funding ($000)

Forecast 2009	Forecast 2010	Forecast 2011	Forecast 2012	Forecast Total 2009 - 2012
300	300	-	-	600

System Operation – 2009 Capital

Project/Program Title	ECC - Training Area Expansion
Status	
Estimated Service Date	December 2010

Work Description:
Renovate relay room area and construct new training and working area to accommodate training and staffing needs.

Justification:
Training and certification needs of operators and staff have increased, and as a result, areas that have been used as offices are now being used as ad-hoc training rooms. Most control center based training is performed on-site to ensure that operators and staff, while receiving their necessary training, are available should system conditions warrant their assistance. In order to accommodate this operational need, a new training area will be added in the relay area. This area may be used as it will be vacated as equipment is retired.

Estimated Completion Date:
December 2010.

Funding ($000)

Forecast 2009	Forecast 2010	Forecast 2011	Forecast 2012	Forecast Total 2009 - 2012
750	750	-	-	1,500

System Operation – 2009 Capital

Project/Program Title	ECC - Operator Console Replacement
Status	Planning
Estimated Service Date	December 2010

Work Description:
Replace operating consoles in District Operator control room.

Justification:
The new consoles will require less space than the existing workstations that needed to be very large to accommodate the size of legacy equipment. The new, smaller consoles will allow for better use of space and efficiencies in operations. Limitations in arrangement will be eliminated and better and more easily maintainable network and power distribution systems will be used. The newer designs will allow for additional operating positions within the same control room area. Control room design to be completed during second quarter 2008. Console design will commence when control room design is finalized.

This work will be done in coordination with the renovation of the East Control Room Renovation work and will be phased in as with the integration of the new EMS (Emergency Management System). This will create an effective and best functional work area for operations.

Estimated Completion Date:
December 2010.

Status:
Planning underway.

Funding ($000)

Forecast 2009	Forecast 2010	Forecast 2011	Forecast 2012	Forecast Total 2009 - 2012
1,600	-	-	-	1,600

System Operation – 2009 Capital

Project/Program Title	ECC – UPS Battery Replacement
Status	Planning
Estimated Service Date	December 2012

Work Description:
The batteries that are used by the three 125kva UPS systems at the Energy Control Center will be replaced.

Justification:
The critical systems at the Energy Control Center are protected by three 125kva UPS systems. The systems require large battery support to provide this protection and to allow uninterrupted transfer of load to the back-up diesel generators. The batteries, installed in 1998, have a 15 year life cycle, which ends in 2013. The batteries are isolated in three different rooms for protection and separation. This project will replace the battery systems in each of the rooms, one room at a time to ensure continued operation of the critical computer systems.

Estimated Completion Date:
December 2012

Status:
Preliminary estimates have been obtained for a battery replacement of this scale. Engineering analysis needs to be started, and the staged replacement plan developed prior to 2012 to allow for the timely replacement.

Funding ($000)

Forecast 2009	Forecast 2010	Forecast 2011	Forecast 2012	Forecast Total 2009 - 2012
-	-	-	500	500

2009 System and Transmission Operations – O&M

Project/Program Title	Coating Refurbishment Program
Status	On-going
Estimated Service Date	On-going

Work Description:
This proactive program will reduce dielectric fluid leaks and increase the availability of transmission feeders. Based on past dielectric fluid leak history, sections of feeder pipe that have been identified to have deteriorated will be excavated and refurbished.

Justification:
This program has resulted in a reduction of the number of leaks in the sections of pipe which have been refurbished. This is an environmental and reliability program. By addressing corrosion issues before the pipe leaks, we are able to reduce the amount of dielectric fluid that is lost in the environment. We also reduce the probability that the feeder will need to be removed from service or fail due to an oil leak caused by corrosion on the pipe.

Over the past three years, we have completed an average of 500 trench feet. Our plan is to accelerate the program in the rate years to complete 750 trench feet on Feeders M51 and M52.

Requested funding is based upon a three-year average cost per trench foot of $2,000 at a plan of refurbishing approximately 750 trench feet annually. The unit cost varies based on the condition and number of pipes in the excavation.

Estimated Completion Date:
On-going

Status:
On-going

Funding ($000)

Actual 2007	Forecast RYE 2010	Forecast RYE 2011	Forecast RYE 2012	Forecast Total RYE 2010 - 2012
473	1,500	1,500	1,500	4,500

2009 System and Transmission Operations – O&M

Project/Program Title	Conductor Repairs
Status	On-going
Estimated Service Date	On-going

Work Description:
This involves installation of repair rods and replacement or repair of splices, dead ends, tap terminals, insulators and shield wires.

Justification:
The increase in funding over the historic year is being requested in order to facilitate conductor repairs, such as insulator replacement and hardware by either Transmission Line Maintenance (TLM) personnel or contractors.

Significant work is being planned for both the M Line and L Line during the next several years. The M Line, which runs from the Goethals Substation to the Fresh Kills Substation in Staten Island and supports two 345KV transmission feeders, was constructed through a tidal wetland in 1965. The insulator assemblies, while not at their expected end of life (50–60 years), have been exposed to contamination and corrosion from the surrounding salt and industrial environment. High corona measurements, which are sometimes indicative of incipient problems on insulator assemblies, have been detected using the Daycor Corona Detection instrument. The L Line, which runs between Pleasant Valley Substation and the New York Connecticut border and supports one 345 kV transmission feeder, has experienced multiple hot spots within the last ten years. The line continues into Connecticut and is maintained by Northeast Utilities (NE). NE completed a fitting replacement program on this same line in the last couple of years replacing over 1000 fittings due to the same hot spot issues. While not at its expected end of life, the fittings on the L Line have demonstrated problems and should be replaced starting in the 2012 rate year.

In addition to the work planned for the M Line and L Line, this funding will be used to address routine maintenance issues that are typically identified during periodic inspections. Examples of this routine maintenance work include the replacement of chipped or otherwise damaged insulators, armor rod repairs to conductors, shield wires, repairs and fitting replacements.

Estimated Completion Date:
On-going.

Status:
This project was approved in the 2008 rate case submittal.

Funding ($000)

Actual 2007	Forecast RYE 2010	Forecast RYE 2011	Forecast RYE 2012	Forecast Total RYE 2010 - 2012
230	450	450	1,450	2,350

2009 System and Transmission Operations – O&M

Project/Program Title	Energy Control Center – Facility Maintenance Costs
Status	
Estimated Service Date	

Work Description:
This program provides for the ongoing facility maintenance of the Energy Control Center (ECC).

Justification:
The Energy Control Center requires continuous facility support (24/7) to ensure that the building systems that protect the critical systems used by operations are always available. Increased costs associated with contracted services and labor associated with maintaining the building and associated systems such as the HVAC, lighting and fire systems, have continued to increase. This program maintains the current level of support needed to operate the ECC facility effectively and efficiently, providing routine and periodic maintenance and services.

Funding ($000)

Historical Year 2007	Forecast RYE 2010	Forecast RYE 2011	Forecast RYE 2012	Forecast Total RYE 2010 - 2012
2,068	2,150	2,150	2,150	6,450

2009 System and Transmission Operations – O&M

Project/Program Title	ECC –Trainer/Compliance Monitor Position
Status	Pending
Estimated Service Date	

Work Description:
Strengthen the training efforts at the Energy Control Center (ECC) by adding a training position in order to meet the current needs of the operators. This position will also be responsible for enhancing compliance monitoring. Some of the duties involved are as follows:

- Monitor and modify training programs as appropriate to ensure operators possess skills needed to safely and reliably operate the electric systems
- Ensure training requirements are being met.
- Facilitate NERC certification of applicable operators
- Facilitate continuing education credits to ensure continuous certification of applicable operators
- Prepare for NERC evaluations and NPCC compliance audits
- Ensure completion of any recommendations arising from NERC evaluations

Justification:
The Energy Control Center is responsible for the safe, reliable and continuous delivery of energy to New York City and Westchester County. Continuing education and training for the staff and operators at the control center is essential to continue providing service to our customers reliably and to maintain Con Edison's reliability record of providing the most electric reliability service in the country.

Currently there are two trainers at the Energy Control Center to provide training to the operators at the ECC. There is a trainer for district operations and another for the bulk power operations. The bulk power trainer is responsible for five different functional operating positions as compared to the district operations trainer's single position responsibility, making it a challenge to provide training effectively with just one trainer. In addition, no programmatic training is provided for the Central Information Group (CIG) positions.

An additional trainer is needed to provide support to the bulk power operations, and to provide basic refresher training to the CIG. Several changes have made the need for this trainer critical at this juncture:

- The new Electric Reliability Organization, NERC is requiring a systematic approach to training to be followed by those entities that can affect the bulk power Interconnection. NERC certification is becoming mandatory and the necessary training must be established and conducted annually to provide the continuing education hours to maintain operator certification.
- Following the 2003 blackout, NERC and NPCC have undertaken programs whereby they conduct evaluations and audits to ensure readiness and compliance with NERC standards. Training is a major area of focus for these evaluations.
- The changing workforce makeup is resulting in newer and less experienced workers being available to fill staff and operating positions. This "greener" workforce requires more entry level and ongoing training to effectively support the organizations needs.

- Deregulation and the separation of reliability and market functions have created an entire new category of educational needs. Operating in concert with an ISO, balancing authority and reliability coordinator and maintaining separation from the market has added training and instructional needs for our operators.

2009 System and Transmission Operations – O&M

- The changing operational requirements associated with reliability improvements following the 2003 blackout are impacting our training requirements. Restoration plans are being modified to include extension of NYISO backbone plan, multiple islands and black start capability. The emphasis on black starting the system in this way will require more detailed and specific training and more simulation practice by the operators.
- The company's adoption of the ICS (incident command structure) for emergency and contingency response, in an effort to align with the emergency organizational structure of other first responder organizations, has also resulted in additional training requirements for our personnel that must be maintained on an annual basis.
- Cross training of the System and Transmission Operators will be initiated in an effort to improve the capabilities of our operating team. Creating a cross functional capability will allow for improved response to contingencies, an enhanced succession plan for the System Operators and will work to maintain the experience level of the team. This will add additional training requirements to each position on an annual basis and create an extended workload for the trainers over the next few years.
- A project for the development of position task lists and position specific training manuals for the purpose of institutionalizing the required knowledge base of the various operating positions has been initiated. This project will require significant effort by the training personnel to develop and maintain going forward in time.
- The continued effort by the company to focus on Environmental, Health and Safety issues and operational impact on those issues has also created additional training requirements for our operating personnel.
- The new EMS system will require additional training to the operators as well as staff in order to effectively operate to the systems full capability.

Status:
Pending

Funding ($000)

Actual 2007	Forecast RYE 2010	Forecast RYE 2011	Forecast RYE 2012	Forecast Total RYE 2010 - 2012
-	125	125	125	375

2009 System and Transmission Operations – O&M

Project/Program Title	Feeder Emergencies
Status	On-going
Estimated Service Date	On-going

Work Description:
This program addresses two types of feeder emergencies:

1. Failure Repairs – Repairs are required to restore transmission feeders which have failed. Failures can be at the joint, on a section of cable or at the pothead. Repairs can include a new joint, a buried joint(s) or an insert.

2. Leak Repairs – Addresses leaks on underground high pressure pipe type feeders. Leaks may be in a manhole, on buried feeder pipes, return lines and/or at risers/potheads.

Justification:
Prompt repairs to failed feeders are required to ensure system reliability. Dielectric fluid which leaks from the high pressure pipe type feeder system must be remediated promptly and in accordance with the standards and guidelines of the regulatory agencies, to ensure compliance and minimize the impact on the public and the environment.

Estimated Completion Date:
On-going

Status:
On-going

Funding ($000)

Actual 2007	Forecast RYE 2010	Forecast RYE 2011	Forecast RYE 2012	Forecast Total RYE 2010 – 2012
4,808	7,826	7,826	7,826	23,478

2009 System and Transmission Operations – O&M

Project/Program Title	Install Bird Discouragers on Selected Portions of P Line and F Line
Status	New program
Estimated Service Date	2009

Work Description:
Install bird discouragers on approximately 50% of P Line Poles and F Line towers.

Justification:
Several outages on 345kV feeders W93, W97 and W98, which are supported on the F and P lines have occurred because of bird activity causing phase to ground faults at transmission structures in Buchanan and Cortlandt. Installation of bird discouragers will prevent this from occurring by causing the birds to roost at locations on the structures which are further from energized conductors, thereby increasing the air gap between conductors and birds.

Estimated Completion Date:
Research and design to be completed in 2008; Installation in 2009 and 2010 as feeder outages become available.

Status:
This project was approved in the 2008 rate case submittal and project completion is dependent upon feeder outage availability.

Funding ($000)

Actual 2007	Forecast RYE 2010	Forecast RYE 2011	Forecast RYE 2012	Forecast Total RYE 2010 - 2012
-	270	270	-	540

2009 System and Transmission Operations – O&M

Project/Program Title	Normalized Human Resources
Status	
Estimated Service Date	On-going

Work Description:
Due to retirements and delayed hiring, various positions in Transmission Planning, System Operations, and Department Office were unfilled at the end of the historic year. These are all required positions and will be filled by year end 2008.

Justification:
All of the positions requested were previously approved, are required to bring the departments back to normal human resource levels, and support the current work plan. Some of the positions have already been filled in the first quarter of 2008, with the remaining positions to be filled by the end of 2008.

Estimated Completion Date:
On-going.

Funding ($000)

Historical Year 2007	Forecast RYE 2010	Forecast RYE 2011	Forecast RYE 2012	Forecast Total RYE 2010 - 2012
-	2,322	2,322	2,322	6,966

2009 System and Transmission Operations – O&M

Project/Program Title	Overhead Line Inspections
Status	On-going
Estimated Service Date	On-going

Work Description:
Conduct helicopter patrols, emergency patrols, and other unscheduled patrols of the overhead transmission lines to obtain information on facility conditions and incipient or existing problems so that necessary maintenance action can be taken to ensure a high standard of reliability on the system.

Justification:
Throughout the year, helicopter patrols and emergency patrols of transmission infrastructure along the rights-of-way are conducted in response to events impacting the transmission system, such as storm events and feeder trips. The program also funds comprehensive helicopter patrols, which entail traveling very slowly in close proximity to the conductors and towers, allowing for a detailed visual inspection of the infrastructure. These comprehensive helicopter patrols serve to supplement climbing inspections. As federal regulations governing transmission system reliability are becoming increasingly more stringent, TLM is planning to complete additional comprehensive inspections to maintain the highest level of system reliability.

Estimated Completion Date:
On-going

Status:
This project was approved in the 2008 rate case submittal.

Funding ($000)

Actual 2007	Forecast RYE 2010	Forecast RYE 2011	Forecast RYE 2012	Forecast Total RYE 2010-2012
145	278	278	278	834

2009 System and Transmission Operations – O&M

Project/Program Title	Tower Painting
Status	On-going
Estimated Service Date	On-going

Work Description:
This program involves the painting of steel towers. Painting is essential to structural integrity and is aesthetically important. Painting of tower structures also contributes to environmental excellence because many structures are coated with lead based paint. Peeling or chipped paint is removed during painting projects.

Justification:
A long-term painting program is essential to ensure the integrity of the steel structures that support transmission lines. During the next several years, work scope will include painting the entire P Line east of the Hudson River and 20% of the D and K lines totaling approximately 210 towers.

Estimated Completion Date:
On-going

Status:
This project was approved in the 2008 rate case submittal.

Funding ($000)

Actual 2007	Forecast RYE 2010	Forecast RYE 2011	Forecast RYE 2012	Forecast Total RYE 2010 - 2012
-	140	140	140	420

2009 System and Transmission Operations – O&M

Project/Program Title	Transmission Planning Studies
Status	
Estimated Service Date	

Work Description:
Perform various studies pertaining to electric bulk power transmission system.

Justification:
Since the advent of competitive wholesale markets, we have seen several proposals by developers for new generation and transmission projects and expect to see more of these types of proposals in the future. This wave of potential expansion and interconnections to the Company's transmission system requires various types of studies and analyses. Some of these studies require the use of proprietary simulation programs and models available only through analytical consultants, such as Siemens/PTI and Mitsubishi Electric.

Funding ($000)

Historical Year 2007	Forecast RYE 2010	Forecast RYE 2011	Forecast RYE 2012	Forecast Total RWE 2010 - 2012
21	100	100	100	300

2009 System and Transmission Operations – O&M

Project/Program Title	Transmission Reliability - Industry Group Fees
Status	
Estimated Service Date	

Work Description:
This program provides funding for New York State Reliability Council (NYSRC) and North American Electric Reliability Corporation (NERC) Transmission Owners and Operators Forum fees.

Justification:
NYSRC assessment fees have increased. In addition, the Company will participate in the recently formed NERC Transmission Owners and Operators Forum. The goal of the forum is to improve the reliability of the electric transmission system through operational excellence. It provides an opportunity for utility personnel to exchange information on operating practices, "lessons learned" from operating the electric systems, and various ways to measure grid reliability. The forum will also recommend reliability standards to NERC.

Funding ($000)

Historical Year 2007	Forecast RYE 2010	Forecast RYE 2011	Forecast RYE 2012	Forecast Total RYE 2010 - 2012
106	160	160	160	480

CONSOLIDATED EDISON COMPANY OF NEW YORK, INC.
CAPITAL AND O&M
SYSTEM AND COMPONENT PERFORMANCE
ELECTRIC OPERATIONS

DESCRIPTION	Page #
Reference Electric Operations - Capital - IIP- 6	
Elmsford Refurbishment	2
59th Street Bridge Crossing	3
Emergency Primary Cable Replacement	4
Overhead Repairs	5
Emergency Services Replacement	6
Street Lights	7
Transformer Installation - Banks Off	8
(Primary) Cable Crossings (XW Riverdale, BQ Flushing)	10
HiPot	12
PILC (Paper Insulated Lead Covered Cable)	13
Transformer Remote Monitoring System	14
Sectionalizing Switches (SF6)	16
Underground Secondary Reliability Program	17
Secondary Open Mains (incl. conduit)	19
Grounding Transformers	20
Shunt reactors	21
Network Reliability	22
Coastal Storm Risk Mitigation	23
Transformer Purchase	25
Distribution Substation Modernization	
Trip Coil Monitor	27
USS Automation	28
Facility Improvement Program	29
Tap Changer Position Indicator System	30
Temperature Gauges	31
USS Transformer Replacement	32
4kV USS Switchgear Replacement	33
USS Life Extension Program	35
Auto Reclose On Bank Breakers	37
Reference Electric Operations - O&M - IIP-7	
Unit Substation Repairs And Inspection	38
Automatic Transfer Switch Operator Replacement	40
RMS Response Group	41
Electrical Engineering Support - Man	42
O&M Vault Repairs - Man	43

2009 Capital

Project/Program Title	Elmsford Substation Refurbishment
Status	Preliminary Design
Estimated Service Date	2011

Work Description:
Relocate all thirty 13kv distribution feeders at the existing Elmsford Substation from their present breaker position to their new position at the newly reconstructed Elmsford Substation.

This project will include 60 new primary sections of cable. This work is estimated to cost $1.3M in 2010 to replace 24 sections of cable and $2M in 2011 to replace 36 sections of cable.

Justification:
As part of the Substation Obsolesce Program, the Elmsford Substation is scheduled in 2011 to be upgraded with new bus work and feeder circuit breakers. This substation reconstruction is necessary due to a high frequency of failures associated with switchgear at the existing station which has been in service for almost 50 years. In order to support this project, we are required to transfer the 13 kV feeders from the old substation to the new substation.

Estimated Completion Date:
2011

Status:
Preliminary Design

Funding ($000)

Forecast 2009	Forecast 2010	Forecast 2011	Forecast 2012	Forecast Total
$0	$1,300	$2,000	$0	$3,300

2009 Capital

Project/Program Title	59th Street Bridge Crossing
Status	Planning
Estimated Service Date	2011

Work Description:
Replace six feeders that are routed over the East 59th Street Bridge and supply Roosevelt Island. The existing feeders consist of aerial cable that is hung on messengers on the outer roadways of the bridge. The new conduit systems will be constructed over the span of the bridge and will house the new feeder cables which will replace the existing hanging aerial cable. A total of four new systems, each consisting of 4-5" steel conduits, will be installed.

This project will include 19,200 trench ft of conduit work and 24 sections of primary cable. We estimate this will cost $2M in 2011. This program will begin in 2011 and complete in 2013.

Justification:
This project will upgrade the existing supply to Roosevelt Island and provide spare capability to add additional feeders for future growth. Over the past 4 years there have been 9 failures and emergency repairs of the feeders the cross the bridge. These emergency repairs often interrupt traffic flow along the bridge. Constructing the new conduit systems will provide additional protection for the feeder cable to mitigate failures. These systems will be more serviceable than the existing system and will enable quicker restoration of these feeders in the event of a failure.

Estimated Completion Date:
This project will be completed in 2013.

Status:
Planning

Funding ($000)

Forecast 2009	Forecast 2010	Forecast 2011	Forecast 2012	Forecast Total 2009 - 2012
-	-	$2,000	$5000	$7,000

2009 Capital

Project/Program Title	Primary Cable Replacement (OA's)
Status	On Going
Estimated Service Date	On Going

Work Description:
This program is the emergency replacement of primary cable which has either failed in service or has been selected for replacement before failure. Cable section replacements are associated with 4kV, 13kV, 27kV, and 33kV feeder open-autos (O/A) annually along with sections of primary cable associated with transformer replacements.

Justification:
Feeders that open-auto as a result of cable and joint failures must be repaired as soon as possible to maintain network system reliability.

These failures, and the time it takes to restore the failed feeder directly impact the distribution system reliability and customer service. Loss of additional feeders in the same network will result in a network contingency which during high load conditions can cause low voltage conditions, cascading component failures, customer outages and possibly a network shut down.

Feeder open-autos have a significant impact in our ability to provide continuity of service to our customers and thus we plan to address every emergency primary cable replacement as quickly as possible.

Estimated Completion Date:
On Going

Status:
On Going

Funding ($000)

Forecast 2009	Forecast 2010	Forecast 2011	Forecast 2012	Forecast 2009-2012
$56,228	$56,056	$53,856	$53,856	$219,996

2009 Capital

Project/Program Title	Emergency Overhead Repairs
Status	Ongoing
Estimated Service Date	Ongoing

Work Description:

Replacement of poles, primary and secondary cable, services and equipment associated with the overhead system including capital storm repairs.

Justification:

The overhead system is susceptible to damage due to storms, hurricanes, high winds, icing, vehicle accidents and other events. This damage must be repaired to restore customers' power and to return the system to its as-designed condition.
These permanent repairs must be done in a timely fashion to ensure distribution system reliability and public safety (temporary repairs can fail and lead to wires down, poles down, etc.).

Estimated Completion Date:

Ongoing

Planning and Budgeting:

Historical Annual Costs ($000)

2004	2005	2006	2007	2008 Requested
8,388	9,421	20,151	15,587	14,267

Status:

Ongoing

Funding ($000)

Forecast 2008	Forecast 2009	Forecast 2010	Forecast 2011	Forecast Total
14,267	14,267	14,267	14,267	57,068

2009 Capital

Project/Program Title	Emergency Services Replacement
Status	On going
Estimated Service Date	On going

Work Description:
Service cables and conduit are the final connection between our distribution system and our customers. These facilities provide our customers with the electric power they require for their homes and businesses. At times these services fail and we are required to replace them. Depending on conditions we may only need to replace the cable. If the existing conduit is unusable due primarily to obstructions or size constraints we may need to excavate to install new conduit to house the cable.

Justification:
When a customer has no electric service or partial service Con Edison does everything it can to make permanent repairs when it gets out to location. Sometimes the cable(s) causing the problem are inaccessible (alternate side of the street parking, dumpster over the structure, etc.) and in this case in order to provide service to the customer we provide them with a temporary service. Other times the crew might have access to the structure but is unable to change out the cable due to a conduit obstruction or conduit size limitation. When this happens Con Edison is required to excavate the street which delays permanent restoration and thus a shunt, temporary service, is provided to the customer.

Estimated Completion Date:
On going

Status:
On going

Funding ($000)

Forecast 2009	Forecast 2010	Forecast 2011	Forecast 2012	Forecast Total 2009 - 2012
$20,053	$20,053	$20,053	$20,053	$80,212

2009 Capital

Project/Program Title	Street Lights
Status	On going
Estimated Service Date	On going

Work Description:
This program addresses the replacement of failed street light cables and associated conduit.

Street Lights have become an increasingly important public safety concern for the New York City Department of Traffic and Westchester municipalities. The City and municipalities, who maintain these lights, patrol the lights and collect field complaints from the public to determine which lights are not working. They then test the lights to determine if it is the City/municipalities' or Con Edison's responsibility to make the repairs.

Justification:
Streetlight failures need to be identified and permanently repaired as they are a vital part to keeping public areas safe. Con Edison has an obligation to public safety to address any Con Edison owned equipment problems associated with streetlights that are identified by the City and municipalities. We plan to continue to make timely, permanent repairs to our streetlight infrastructure as a commitment to public safety both so that streetlights stay lit, and that any new cable installed lessens the possibility of stray voltage at the location.

Estimated Completion Date:
On going

Status:
On going

Funding ($000)

Forecast 2009	Forecast 2010	Forecast 2011	Forecast 2012	Forecast Total 2009 - 2012
$15,253	$15,003	$14,753	$14,753	$59,762

2009 Capital

Project/Program Title	Transformer Installations – Banks Off
Status	Ongoing
Estimated Service Date	Ongoing

Work Description:
The work required is to replace failed overhead, URD and underground network transformers that are found to be defective and are removed from the system on an emergency basis (OOE). In 2007 the Company replaced 1007 underground network transformers on emergency system wide. At year end there were 343 underground network transformers off the system.

The breakdown of transformers replaced by Service Region is as follows:

2007 Emergency UG Transformer Replacements by Region				
Region	Transformer Size			
	500KVA	1000KVA	2500KVA	Total
Manhattan	84	183	40	307
Brooklyn/Queens	457	79	13	549
Bronx/Westchester	103	32	2	137
Staten Island	8	5	1	14
Total	652	299	56	1,007

Due to public safety concerns we have instituted a more aggressive underground transformer inspection program which now includes testing for dissolved gas in oil for all units. We have also started installing remote monitoring equipment on transformers which provide real time pressure and temperature readings. As a result of this increased monitoring we anticipate uncovering an increased number of transformers that will require emergency replacement.

Justification:
Transformers represent a key component of the underground secondary network distribution system. Replacing failed transformer units and those that require replacement as a result of defects found during inspection is a critical function of ensuring the integrity of the network system.

Loss of multiple transformers in the same network especially during high load periods can result in local area voltage problems and customer outages. In addition to impacting the distribution system reliability and customer service, there is a significant public safety concern associated with transformers that are defective.

Estimated Completion Date:
Ongoing

Status:
Ongoing

2009 Capital

Funding ($000)

Forecast 2009	Forecast 2010	Forecast 2011	Forecast 2012	Forecast 2009-2012
$ 22,551	$ 21,146	$ 21,146	$ 21,146	$ 85,989

2009 Capital

Project/Program Title	Cable Crossing (XW Riverdale, BQ Flushing)
Status	Construction and Planning
Estimated Service Date	2015

Work Description:
Install new conduit and cable systems for primary distribution network feeders supplying the Riverdale and Flushing networks. The Riverdale network is supplied by the Sherman Creek substation and the Flushing network is supplied by the Corona No.1 substation.

Install new conduits in each of 8 crossings associated with the supply from the Corona No.1 substation to the Flushing network. Four of these crossings are located under the Grand Central Parkway, of which some include transite conduit which contain asbestos. The remaining 4 crossings transverse the Flushing River and consists of concrete conduits, cable crossings, and cables installed on the NYCTA structure used for the #7 subway line.

Install new Riverdale submarine crossings to replace the existing aged submarine crossings. The project will be handled in multiple stages as follows:

Stage 1 – In conjunction with the planned installation of the new M-29 transmission feeder, a tunnel under the Hudson River will be constructed. This tunnel will be used to install 4 new distribution feeders to replace 4 of the 12 existing submarine crossings that connect Sherman Creek Substation to the Riverdale Network. The tunnel will contain a total of 16 conduits, 8 of which will house the 4 new feeders plus one spare cable each leaving the remaining 8 conduits for future growth. To connect the feeders in the tunnel to the Sherman Creek feeder outlet and the Riverdale Network it will be necessary to construct 2 new conduit systems and install new feeder cables on both the Manhattan and Bronx sides of the tunnel. We anticipate pickup of the new cables before the summer of 2011.

Stage 2 – Hire a Consultant to design a second crossing using a boring method for installation of conduits and cables under the Harlem River in the vicinity of the river crossings replaced by the project described in Stage 1.

Stage 3 – Begin construction in 2012 of the 2 borings to install 7 new conduit in each of 2 30" sleeves with cable effectively replacing 4 additional submarine crossings leaving sufficient room for future crossings cable installations. For diversity 2 feeders plus 2 spare cables will be installed in each of the 2 borings. We anticipate energizing this crossing before the summer of 2013.

Stage 4 – Begin design in 2012 and construction in 2013 of the 2 borings to install 7 new conduits in each of 2 30" sleeves with cable effectively replacing the 4 remaining submarine crossings supplying the Riverdale Network leaving sufficient room for future crossings cable installations. For diversity 2 feeders plus 2 spare cables will be installed in each of the 2 borings. We anticipate energizing this crossing before the summer of 2015. This project will be constructed in the vicinity of the submarine cables replaced in Stage 3.

2009 Capital

Justification:
The Flushing network supplies both network load of 27kV distribution and non-network of 4kV and 27 kV auto loop. It is planned to utilize the remaining spare conduits to meet projected load growth in addition to upgrading projected overloaded cables to larger cables. New spare conduits will not only provide capacity and increased reliability, they will mitigate safety and environmental concerns such as pulling cable that is housed in transite conduit and working in traffic lanes on the Grand Central Parkway.

The Riverdale Load area is supplied by 12 feeders from the Sherman Creek Substation located in northern Manhattan. The feeders cross over to the Bronx from Manhattan via submarine cable crossings under the Harlem River. These cables, which are the sole supply to the Riverdale area, were installed over a period of time between 1913 through 1946. Over the years, these cables have experienced an increasing failure rate. Similar vintage cables failed at a rate of 1 every 2 years from 1920 to 1980. Between 1980 and 1990, the failure rates on these cables increased to 3 failures every year and during the 1990's the failure rate increased dramatically to 8 failures per year. Since then, the cables have only experienced one failure but the potential remains for a catastrophic event that would eliminate our only source of supply the entire Riverdale area interrupting over 29,000 customers for an extended period of time. At the present time, when these cables fail, our only alternative is to abandon the cables and utilize one of the few remaining spare cables. Our plan is to take a proactive approach to replace this antiquated system with new cables prior to experiencing a catastrophic failure. This will maintain the integrity of our supply to Riverdale and provide additional capacity to help spur development in this area.

Estimated Completion Date:
The Flushing crossing will complete in 2011, and the Riverdale crossings will complete in 2015.

Status:
In construction and planning

Funding ($000)

Forecast 2009	Forecast 2010	Forecast 2011	Forecast 2012	Forecast Total 2009 - 2012
$8,000	$8,000	$8,000	$9,000	$33,000

2009 Capital

Project/Program Title	Hi-Pot
Status	Ongoing
Estimated Service Date	Ongoing

Work Description:
The Company's spring HiPot program represents a proven diagnostic reliability tool for the mitigation of summer network primary feeder outages. This program is implemented annually from October 1 through May 31 and consists of three major stages: 1) the selection of targeted network feeders for the program; 2) the high voltage (DC or AC) testing of those feeders; and 3) the return to service of the feeders prior to the high capacity summer period.

In selecting the feeders for inclusion in the program attention is paid to recent feeder summer performance, the composition of the feeder in terms of component type, and the relative importance of the feeder to network operation. Based on these characteristics a composite index of the likelihood of poor feeder performance and potential adverse network effects due to that performance is derived. Using this index network feeders are prioritized and targeted for HiPot testing.

Justification:
The HiPot test procedure is described in detail in specification EO – 4019 "Testing of AC Feeders Operating at 4kV to 33kV" and essentially represents a high voltage test of targeted feeders with the intent of exposing incipient faults among the feeder components. It has been found that the compromised components detected through this testing are the same components that fail during the summer heat wave periods. By detecting problem components under controlled conditions prior to the summer period potential network feeder outages (both single and multiple) are avoided.
Regression analysis performed across the previous eleven years of system summer outage data has shown that for approximately every two "Failed On Test" (FOT) results obtained during feeder spring HiPot testing, one "Open Auto" (OA) is avoided during the subsequent summer period.

Estimated Completion Date:
On going

Status:
Ongoing

Funding ($000)

Forecast 2009	Forecast 2010	Forecast 2011	Forecast 2012	Forecast Total 2009-2012
$5,399	$5,498	$5,600	$6,100	$22,597

2009 Capital

Project/Program Title	PILC (Paper Insulated Lead Covered Cable)
Status	On going
Estimated Service Date	2020

Work Description:
Accelerate the removal of paper insulated lead covered cable (PILC) from the electric distribution system. The current program is to completely remove PILC cable from the system by 2024; this new program, which was recommended by the PSC, will accelerate the removal of PILC cable to be completed by 2020. As a priority, the Long Island City network will be purged of PILC cable by 2012, with the remaining system PILC cable removed network by network.

Justification:
The initiative to remove PILC cable from the network began in 1986 due to the environmental concern pertaining to the PCBs (Polychlorinated biphenyls) in the oil, and the lead covering.

Since 1999, network reliability studies have determined that PILC cable has a higher rate of failure than solid dielectric cable or EPR (Ethylene Propylene Rubber) cable. Additionally, thermally sensitive stop joints associated with PILC cable (Elastimold 2W-1W and pre-1994 Raychem 3W-1W stop joints) have been found to be the most significant contributors to failures of primary feeders supplying our distribution networks.

PILC represents approximately 20% of the primary cable located throughout Con Edison's electric distribution system. Due to this significant amount of cable, a long-term program had been established to replace PILC with EPR cable.

Network reliability will significantly improve as PILC cable and associated thermally sensitive stop-joints are removed from the distribution feeders.

In 2007, 960 sections of underground PILC primary cable were replaced at a cost of $19.7M.

Estimated Completion Date:
2020

Status:
On going

Funding ($000)

Forecast 2009	Forecast 2010	Forecast 2011	Forecast 2012	Forecast Total 2009 - 2012
$33,000	$33,000	$33,000	$33,000	$132,000

2009 Capital

Project/Program Title	Remote Monitoring Transmit Meters Pressure Temperature/Oil
Status	Ongoing
Estimated Service Date	2017

Work Description:
Upgrade all network transformer locations with new 3rd generation transmitter, oil temperature gauges, tank pressure sensor and oil level sensor.

Justification:
The Remote Monitoring System allows company personnel to make better informed decisions about current and future system conditions.

The collection of real-time transformer data permits our Distribution Engineering, Regional Engineering, Field Engineering and Emergency Response Groups to focus on failure prevention by monitoring loading on feeders and equipment, identifying transformers exhibiting early signs of abnormal behavior, and providing readiness for next-worse-case-scenario.

Accelerating the deployment of the 3rd Generation of RMS transmitters will allow operators and engineers to monitor, in real-time, transformer tank pressure, oil temperature and receive an alarm when the transformer oil level is approaching its permissible low level. This proposal includes a replacement program for RMS on transformer locations presently equipped with first-generation RMS.

We currently have approximately 21,000 transformer locations throughout the five boroughs and Westchester which require upgrades to monitor transformer tank pressure, oil temperature, and oil level. This project includes the field upgrade of transmitters and sensors on existing network transformer locations as well as the installation of sensors on new transformers purchased prior to field installation.

The proposal to accelerate the installation of 3rd Generation RMS Transmitters will enhance public safety by mitigating transformer failure, and improve system (network) reliability due to the improved data capture.

Estimated Completion Date:
The plan is to complete the installation of all 3rd Generation of RMS devices system-wide by 2017

Planning and Budgeting:
If approved, the Shop Installation cost will be added to the ED2 budget.

Status:
Ongoing.

2009 Capital

Funding ($000)

Field Upgrade (Indicated on Exhibit)

Forecast 2009	Forecast 2010	Forecast 2011	Forecast 2012	Forecast Total
9,800	13,000	13,000	13,000	48,800

Shop Installation (Funded within Transformer Purchase)

Forecast 2009	Forecast 2010	Forecast 2011	Forecast 2012	Forecast Total
7,102	6,447	6,447	6,447	26,443

Total Capital (Includes Field Portion and Transformer Purchase Portion)

Forecast 2009	Forecas t 2010	Forecast 2011	Forecast 2012	Forecast Total
16,902	19,447	19,447	19,447	75,243

Alternatives:

Reduction/elimination of this program would impact the benefits to improved public safety and system reliability associated with remote monitoring of network transformers for pressure temperature and oil.

2009 Capital

Project/Program Title	Sectionalizing Switches (SF6)
Status	On going
Estimated Service Date	On going

Work Description:
Install primary (SF_6) switches on selected network feeders. This work involved installing or identifying a structure to accommodate the equipment, installing the switch, H-type disconnect, fault indicators, and associated cabling.

Justification:
Installing primary (SF_6) switches to isolate feeder failures will increase network reliability. These switches will permit rapid isolation of faulted segments of primary feeders, allowing the unfaulted portion to be re-energized, and thereby will reduce the amount of load shifted to other distribution feeders.

These benefits of installing SF_6 switches were documented through the "Contingency" network reliability model. Analyses were performed on a number of networks to ascertain the costs and benefits of installing SF_6 switches and other alternative means with which to improve network reliability. From these analyses, we can conclude that, while there is no one single best way to increase network reliability, the reduction in time between local manual switch operation (4 hours) to remote operation (5 minutes) significantly reduces the increase in temperature of feeder components, and thereby reduces the probability of subsequent component failure. The switches currently on the system were designed for manual operation and, under a separate program, are being retrofit with SCADA equipment. The new switches will be fitted with SCADA equipment for remote monitoring and operation.

Estimated Completion Date:
On going

Planning and Budgeting:
The installation of primary (SF_6) switches, to include the additional primary and secondary spans, ducting, and structure construction: $175K per switch.
25 switches per year x $175/Switch= $4,375K/year.

Status:
On going

Funding ($000)

Forecast 2009	Forecast 2010	Forecast 2011	Forecast 2012	Forecast Total
4,243	4,356	4,475	4,501	17,575

2009 Capital

Project/Program Title	Underground Secondary Reliability Program
Status	Ongoing
Estimated Service Date	Ongoing

Work Description:
Initiate a system wide Underground Secondary Cable Replacement Program to increase overall system performance reliability and mitigate public safety events such as electric shock, manhole fire and manhole explosion incidents. The program targets the reinforcement of the secondary grid infrastructure by targeting aging secondary cable and underground structures to eliminate congestion.

The program also includes installation of vented metal service box covers on the street and vented composite service box covers on the sidewalks. The program requires replacing all covers with vented composite covers on the sidewalk and at the minimum of one cover panel at all service box locations on the street.

Justification:
Targeted replacement of underground secondary cable will improve system reliability and prevent future failures.

The installation of vented service box covers will help to reduce the buildup of combustible gases associated with secondary events, reducing the severity of underground events and enhancing public safety. EPRI testing results indicate the success of vented covers in terms of cover dislodgement. The installation of vented manhole covers has successfully validated the effect of ventilation in mitigating secondary events. Smoke emitted through the ventilated cover creates a visible indicator for the public thereby increasing public safety. The proposed installation of vented composite (i.e. electrically insulating) service box covers on the sidewalks will enhance public safety by mitigating stray voltage in addition to the combustible gases.

Failed secondary cables or open mains on the networks reduce the reliability of the secondary network system, stress remaining transformers and secondary mains and expose customers to a higher risk of outage. We have identified areas in the targeted networks to improve the performance of the secondary networks. We will also employ extensions of secondary burnouts where practical when the underground has determined the existing secondary could cause potential problems. Energy services will be extending service jobs where inspections show problems with existing secondary.

Estimated Completion Date:
Ongoing

Planning and Budgeting:
The purpose of this program is to enhance public safety by reducing the severity of underground events by installing vented covers which will help reduce the buildup of combustible gases associated with secondary events and mitigating stray voltage with the installation of vented composite service box covers on the sidewalks.

The breakdown of the secondary reliability work planned by year is listed in the table below:

	2009	2010	2011	2012
Cable Sections	2000	2300	3000	4000
Obstructed Sections	500	575	600	800
Structure Conductor Upgrades	412	445	368	452
Vented Covers	11,400	21,000	21,000	21,000

The material and labor cost associated with the replacement of the rectangular covers located on the sidewalk is estimated to be at $1,150 for the composite material and $150 for installation with a grand total of $1,300, per cover.
The round covers located on the sidewalk will cost $350 for metal covers and $150 for installation with a grand total of $500, per cover.
The rectangular covers located on the street will cost $450 for metal covers and $150 for installation with a total of $600, per cover.
The material and labor cost associated with each secondary cable section is $10,000/section.
The material and labor cost associated with each obstructed secondary cable section is $13,600/section. The cost is higher due to excavation required to remove the old conduit and labor as well as material costs associated with adding new conduit.
The material and labor cost associated with an underground structure upgrade is $10,000/unit. This cost includes the cost of permit, excavation, paving, enlarging the facility, material, relocating existing facilities and labor.

Status:
Ongoing

Funding ($000)

	Forecast 2009	Forecast 2010	Forecast 2011	Forecast 2012	Forecast Total
Secondary Rebuild	46,891	35,237	41,806	55,352	179,286
Vented covers	8,375	15,375	15,375	15,375	54,500
Total	55,266	50,612	57,181	70,727	233,786

2009 Capital

Project/Program Title	Secondary Open Mains
Status	On going
Estimated Service Date	On Going

Work Description:
This program involves emergency repair work on the secondary network to address secondary cable failures. These repairs often involve cable replacement, cable joint replacement and related conduit work. This also includes any access requirements such as excavating in the street to perform the work.
The scope of secondary main replacement work is subject to the amount of work required due to secondary burn outs each year, and thus will be variable from year to year.

Justification:
Secondary open mains require repair to ensure the integrity of the secondary network system because open mains can cause area low voltage conditions, outages, and additional main damage due to overloads.

Secondary open mains are often caused by cable insulation breakdown which occurs due to aging, contact within the structure, and salt. Secondary failures can occur during the off-peak season, or during the summer when the load is much higher. However, since these repairs are critical to keeping service continuity to our network customers, this program will continue to address any and all capital replacements required following secondary cable failures.

Estimated Completion Date:
On going

Status:
On going

Funding ($000)

Forecast 2009	Forecast 2010	Forecast 2011	Forecast 2012	Forecast Total 2009 - 2012
$144,150	$139,245	$129,871	$129,871	$543,137

Project/Program Title	Grounding Transformers
Status	
Estimated Service Date	2023

Work Description:
Install grounding transformers on the supply feeder and/or the alternate supply feeder to 13kV and 27kV autoloops.

Justification:
The installation of grounding transformers on feeders that supply single phase load will eliminate dangerous over voltages that can occur during a primary feeder fault. These over voltages can cause extensive damage to customer equipment.

Grounding transformers (Zig-Zag) are required on all 27kV and 13kV feeders that supply both line-to-neutral loads and three-phase delta-wye transformers which could backfeed under certain operating conditions as dictated by specification *EO-5053: Application of grounding transformers on 27kV feeders* and *EO-2042: Application of grounding transformers on 13kV feeders*. This situation exists on network feeders that supply autoloops. The purpose of a grounding transformer is to limit over voltages on single-phase open-wire circuits during faults, as well as to limit load imbalance conditions under backfeed. During steady-state conditions, grounding transformers secure the zero sequence current path when a delta three wire system is the source for a four wire system containing equipment that is rated line-to-ground. During balanced line voltage conditions, the grounding transformer effectively presents an open circuit (infinite impedance) to the system so that no current (except for excitation) will flow through the transformer. In this program we will ensure the maximum number of grounding transformers connected to an area substation is not exceeded, ensuring the maximum fault current will stay within the safe interruption capability of the substation equipment.

Estimated Completion Date:
2023

Planning and Budgeting

GTVs Needed	Cost/Unit	Total Cost	Years
68	$163K	$11,100K	15

We plan to initially install 1 to 2 grounding transformers per year on the critical main supply feeders, and then increase transformer installation to 5-6 per year in year 2013 to 2023.

Status:
Re-establishment of a prior program.

Funding ($000)

Capital

Forecast 2009	Forecast 2010	Forecast 2011	Forecast 2012	Forecast Total
150	180	150	150	630

2009 Capital

Project/Program Title	Shunt Reactors
Status	Design
Estimated Service Date	2014

Work Description:
This is a program to continue the installation of shunt reactors.
The current plan is to install fifteen (15) reactors in 2009 and twenty-seven (27) reactors per year for the next four years to address the additional 123 reactors that have been identified for replacement.
Associated increased work for this project involves replacing existing or installing new reactors. This will require installing 104 new vaults, 127 sections of primary, 11,000 feet of primary duct and 123 reactors over the four (4) years of the program.

Justification:
Shunt reactors are required to protect the Company and customer equipment due to potential over-voltage conditions that may happen when a network protector remains closed or alive on back feed when its respective feeder is out of service. In this case, the secondary mains supplying that protector will experience an over voltage condition subjecting both company and customer equipment to this condition. To eliminate this, shunt reactors are installed on the 27 kV feeders to limit cable charging current. The magnitude of the over voltage condition that could result is more than 150 Volts Line-to-Neutral on the secondary side of a back-fed transformer.

Estimated Completion Date:
The plan is to complete the installation of the 123 reactors by 2014

Planning and Budgeting:
If approved, the equipment purchase cost will be added to the ED2 budget.

Status:
Design

Funding ($000)

ED1 – Equipment Installation (Funded under Shunt Reactors on Exhibit)

Forecast 2009	Forecast 2010	Forecast 2011	Forecast 2012	Forecast Total
1,376	2,761	2,788	2,790	9,725

ED2 – Equipment Purchases (Funded under Transformer Purchase)

Forecast 2009	Forecast 2010	Forecast 2011	Forecast 2012	Forecast Total
3,385	5,404	5,425	5,258	19,472

Total Capital (Funding for both Installation and Purchase)

Forecast 2009	Forecast 2010	Forecast 2011	Forecast 2012	Forecast Total
4,761	8,165	8,213	8,048	29,197

Project/Program Title	Network Reliability
Status	Planning
Estimated Service Date	2017

Work Description:
Establish new distribution feeders in Manhattan, Brooklyn/Queens, and Bronx/Westchester regions by de-bifurcating existing feeders beginning in 2008. To accomplish this, bifurcated feeders supplying a given network or load area via two main runs of cables (legs) will be de-bifurcated, creating two separate feeders with one leg each. Work will entail establishing:

- 34 new feeders in Manhattan
- 19 new feeders in Bronx/Westchester
- 27 new feeders in Brooklyn/Queens

The Company will utilize existing spare feeder position in area substations, or construct new area substation cubicles where necessary, to accommodate the new distribution feeders.

Justification:
The reliability of the networks and load areas where these new feeders will be established is expected to improve. Since 1999, Con Edison has worked to identify the factors that affect the reliability of network feeders and the likelihood of multiple network contingencies. For heat waves, feeder and component load and the occurrence of feeder open-autos (OAs) within a short time of a previous OA are found to be particularly important.

These additional feeders will provide a more distributed and balanced supply to the network and more balanced feeder loading during normal conditions (all feeders in service). The increased number of feeders available during contingencies will also mitigate the potential for cascading feeder failures associated with high feeder loading due to shifting load following a feeder open-auto.

Additionally, this program will reduce the number of components (i.e. cable, splices, and transformers) per feeder, thereby reducing exposure to failures and improving reliability.

Estimated Completion Date:
2017

Status:
Planning

Funding ($000)

Forecast 2009	Forecast 2010	Forecast 2011	Forecast 2012	Forecast Total
$25,206	$25,723	$26,545	$26,545	$104,019

2009 Capital

Project/Program Title	Coastal Storm Risk Mitigation
Status	Proposed – Engineering work being done
Estimated Service Date	2018

Work Description:
This program was initiated as part of Con Edison's Corporate Coastal Storm Plan ("CCSP"). An analysis of equipment during the development of the Company's Coastal Storm Plan identified underground equipment in the various storm surge zones associated with each level of hurricane as established by the Army Corp of Engineers. Because of the potential exposure to storm surge and our need to provide service to our customers within these areas, we have established this program to mitigate the impact of salt water exposure.

Focusing on the network equipment residing in the Category 1 hurricane storm surge area, this program addresses two key issues. First, it provides for the electric isolation of 277/480V locations where we do not presently have an opportunity to replace existing equipment with submersible equipment. Second, it identifies and establishes a program to replace existing non-submersible 120/208V equipment with submersible equipment.

During a significant coastal storm, the Company's service area may be impacted by storm surge. This storm surge, as predicted by the Army Corps of Engineers, will expose certain underground equipment to salt water. Some of our underground equipment within the anticipated storm surge area is not designed to be exposed to salt water. The exposure of this non-submersible equipment when energized may cause it to fail, thereby risking the integrity of the distribution feeder and the associated network. In addition, the exposure of this non-submersible equipment when de-energized would also result in significant damage to exposed parts such as relays and motors. The repair or replacement of these exposed de-energized units would increase the time required to restore our system after a significant coastal storm.

The Company will install flood switches to isolate approximately 290 transformer vault locations containing 277/480V equipment in Category 1 storm surge zones. (As noted by Company witness Kressner in the 2008 electric rate case, these flood switches were developed as part of a Company Research and Development effort.) The switches allow the transformer to be de-energized without the need to de-energize its supply feeder. Once installed, these flood switches will facilitate isolating portions of the system in anticipation of a significant coastal storm event. Further, the Company will replace approximately 140 120/208 transformer vaults with vaults that can accommodate submersible transformers and network protectors. Existing vaults are not large enough to accommodate the size of the submersible transformers and network protectors currently available to the Company. The installation of submersible transformers and network protectors in these enlarged vaults will minimize the damage that will result when these vaults and the associated equipment are exposed to salt water.

In an effort to reduce costs and expedite the replacement of the non-submersible equipment, Con Edison also is working with vendors to develop a prototype submersible transformer and network protector that fits into existing vaults. This would enhance our ability to change these units out since it would eliminate the time, effort and cost associated with replacing the entire vault structure. Pending development of a viable prototype, our existing plan cost study anticipates replacing the existing vault structure. This design work is presently underway by Distribution Engineering.

The use of the flood switch and the replacement of non-submersible equipment will contribute to minimizing the damage realized during a significant storm surge event. Based upon preliminary design requirements associated with the replacement of these units, a Replacement Task Force will be required to project manage the program. Among other things, the Replacement Task Force will coordinate feeder outages, work with the vault and bus department to coordinate each vault, coordinate with customers and facility management, order and track material and coordinate with contractor and Company personnel. The staffing required for the Replacement Task Force is 13 people. This is in addition to the 21 field personnel required for the completion of this work. Based on this funding level we anticipate that the locations identified in the category 1 zone would be completed in approximately 20 years.

Justification:
Corporate Coastal Storm Plan – risk mitigation strategy

Estimated Completion Date:
2029

Status:
Design for submersible network protectors is pending

Funding ($000)

Forecast 2009	Forecast 2010	Forecast 2011	Forecast 2012	Forecast Total
3,000	3,000	3,000	3,000	15,000

2009 Capital

Project/Program Title	Transformer Purchase
Status	Ongoing
Estimated Service Date	Ongoing

Work Description:
This program will fund the ED2 capital budget used to purchase new and/or reconditioned electrical distribution equipment, primarily underground network transformers, overhead transformers, padmount transformers including mini-pads, emergency generators, and network protectors to support distribution system relief, reliability and growth programs.

Justification:
This equipment is needed to support Electric Operations Construction and Energy Services in the installation of electrical distribution equipment to support the regions' requests and projections as detailed in their capital installation (ED1) and O&M budgets, based on active and planned burnout, new business, and system relief and reinforcement projects.

We will continue to institute and expand the various failure mitigation programs to identify the electrical distribution equipment in our system for which removal is most urgent. The programs are designed to proactively inspect our field equipment, primarily underground transformers, and replace those that exhibit warning signs of a potential failure, before it fails, to ensure public safety and maintain system reliability.

In-service transformer failures were reduced from 151 in 2005 to 120 in 2006. As we amassed additional data in 2007, we were able to improve our analyses, and further reduced failures to 70. Of the units that failed in-service, we also achieved quantifiable reductions in the number of units that ruptured. For year end 2005, 2006 and 2007, the units that ruptured were 18, 13 and 6 respectively. These reductions are in direct correlation to the results of our failure mitigation programs. By year end 2007, we removed 205 units that exhibited symptoms to potentially fail in-service, and an additional 60 units have been removed thru March 2008.

Estimated Completion Date:
Ongoing

Status:
Ongoing

Funding ($000)
The purchase of new transformers and associated distribution equipment is a vital element to ensuring support of the planned work and to ensure that equipment is also available when immediate unplanned replacements are needed. The funding detailed below is reflective of the cost of the equipment for normal planned work, and the incremental impact of each of the failure mitigation programs. In order to highlight the merit of each program, individual white papers have been prepared as part of this submission process.

2009 Capital

Projected Requirements as forecasted by Regions and Energy Services
Based on 2007 Usage

BROOKLYN/QUEENS

	Network Protectors		UG Transformers		Other (OH, URD, etc.)		TOTALS	
	Units	$	Units	$	Units	$	Units	$
EMERGENCY/SYSTEM RELIABILITY	684	$15,889,308	549	$21,335,899	134	$897,779	1367	$38,122,986
LOAD RELIEF	222	$5,742,526	234	$8,619,769	57	$290,673	513	$14,652,968
NEW BUSINESS	88	$2,644,885	101	$5,945,842	86	$509,428	275	$9,100,155
	994	$24,276,719	884	$35,901,510	277	$1,697,880	2155	$61,876,109

BRONX/WESTCHESTER

	Network Protectors		UG Transformers		Other (OH, URD, etc.)		TOTALS	
	Units	$	Units	$	Units	$	Units	$
EMERGENCY/SYSTEM RELIABILITY	324	$8,057,071	137	$5,116,524	432	$1,729,255	893	$14,902,850
LOAD RELIEF	25	$615,157	97	$3,845,211	369	$1,618,667	491	$6,079,035
NEW BUSINESS	32	$856,834	33	$2,258,021	200	$970,230	265	$4,085,085
	381	$9,529,062	267	$11,219,756	1001	$4,318,152	1649	$25,066,970

MANHATTAN

	Network Protectors		UG Transformers		Other (OH, URD, etc.)		TOTALS	
	Units	$	Units	$	Units	$	Units	$
EMERGENCY/SYSTEM RELIABILITY	438	$11,553,187	307	$19,142,206	6	$66,566	751	$30,761,959
LOAD RELIEF	78	$2,518,107	92	$5,429,566	0	$0	170	$7,947,673
NEW BUSINESS	131	$4,604,532	136	$9,054,360	9	$1,890	276	$13,660,782
	647	$18,675,826	535	$33,626,132	15	$68,456	1197	$52,370,414

STATEN ISLAND

	Network Protectors		UG Transformers		Other (OH, URD, etc.)		TOTALS	
	Units	$	Units	$	Units	$	Units	$
EMERGENCY/SYSTEM RELIABILITY	18	$578,391	16	$907,388	219	$796,360	253	$2,282,139
LOAD RELIEF	0	$0	3	$291,446	51	$261,251	54	$552,697
NEW BUSINESS	0	$0	0	$0	95	$504,851	95	$504,851
	18	$578,391	19	$1,198,834	365	$1,562,462	402	$3,339,687

TOTAL

	Network Protectors		UG Transformers		Other (OH, URD, etc.)		TOTALS	
	Units	$	Units	$	Units	$	Units	$
EMERGENCY/SYSTEM RELIABILITY	1464	36077957	1009	46502017	791	3489960	3264	$86,069,934
LOAD RELIEF	325	8875790	426	18185982	477	2170591	1228	$29,232,373
NEW BUSINESS	251	8106251	270	17258223	390	1986399	911	$27,350,673
	2040	$53,059,998	1705	$81,946,232	1658	$7,646,950	5403	$142,653,180

	2009	2010	2011	2012
ED2 Base 2007	$142,653,180	$142,653,180	$142,653,180	$142,653,180
Shunt Reactors	$6,385,080	$5,404,400	$5,425,400	$5,258,400
RMSPTO	$7,102,069	$6,446,651	$6,446,651	$6,446,651
GE Tank Rupture	$1,000,000	$1,000,000	$1,000,000	$1,000,000
Natural Ester Program	$900,000	$1,800,000	$1,800,000	$1,800,000
Load Relief Reduction	-$7,922,329	-$10,198,230	-$10,185,231	-$9,908,231
Total Transformer Purchase	$150,118,000	$147,106,000	$147,140,000	$147,250,000

Alternatives:

Reduction/elimination of these programs would impact the support of active and planned burnout, new business, and system relief and reinforcement projects and may impact the availability of equipment required for immediate unplanned replacements.

2009 Capital

Project/Program Title	Trip Coil Monitor
Status	
Service Date	2012

Work Description:
Currently there is no method to determine if the DC trip circuit for a 4kV Unit Substation breaker is capable of tripping the breaker under fault conditions. If the breaker failed to trip due to a DC circuit problem, damage could occur at the station and/or there could be customer outages.

Justification:
By adding electrical system equipment and components, the DC circuit could be monitored to help prevent failure of the dc circuit. Monitoring would detect the following:

- Blown DC fuse
- Open DC cutout switch
- Loose or disconnected wires in the DC circuit
- Breaker trip coil that has shorted or opened
- Improve the reliability of reporting breaker status

Completion Date: 2012

Status:

Funding ($000)

Forecast 2009	Forecast 2010	Forecast 2011	Forecast 2012	Forecast Total
235	235	235	235	940

2009 Capital

Project/Program Title	USS Automation
Status	On Going
Service Date	2011

Work Description:
Complete the installation of the 4kV Unit Substation Automation System. There are 25 additional 4kV Unit Substations that are presently not reporting to our regional control centers. The work includes the installation and wiring of hardware at the stations, and checking and certifying the operation of the breakers from the regional control centers, including checking the data at the control centers.

We plan to install 6 automation systems each year with an estimated annual cost of $150K.

Justification:
The work is required in order to remotely operate circuit breakers at the 4kV Unit Substations from the regional control centers. This can be done as soon as system conditions allow it to and without the need for a station operator, allowing Customer's to be restored more quickly. In order for all 240 unit substations to be controlled and monitored from the regional control center, this work must be completed.

Completion Date:
2011

Status:
Ongoing

Funding ($000)

Forecast 2009	Forecast 2010	Forecast 2011	Forecast 2012	Forecast Total 2009 - 2012
150	150	150	150	600

2009 Capital

Project/Program Title	Facility Improvement Program (USS)
Status	
Estimated Service Date	2009

Work Description:
This program involves upgrades to various unit substation facilities (fencing, landscaping and security).

- Install new fencing to improve the security barrier. Remove existing standard 6 feet to 8 feet mesh fences with 2.5 inch meshing and replace with 10 feet high fences with 1 inch meshing.
- Install new landscaping (trees and shrubs) to aesthetically upgrade various unit substations.
- Install new asphalt paved driveways to replace bluestone or dirt driveways.
- Install additional lighting fixtures and upgraded security locks at unit substations to provide increased security.

Justification:
Increase security and prevent public access to the unit substations. Establish aesthetically acceptable appearance to satisfy and maintain the residential environment.

Estimated Completion Date:
2009

Planning and Budgeting:
These stations are targeted based on inspection and need. Various locations are continually identified to be in need of a fence upgrade, driveway replacement, and landscaping. The costs associated with these are as follows:

- Fence upgrade: $50,000 per station
- Driveway replacement from dirt/bluestone to asphalt: $40,000 per station
- Landscaping: $75,000 per station

Status:
Ongoing

Funding ($000)

Forecast 2009	Forecast 2010	Forecast 2011	Forecast 2012	Forecast Total
425	-	-	-	425

Project/Program Title	Tap Changer Position Indicator System Frame Relay
Status	Ongoing
Estimated Service Date	2011

Work Description:

This project involves the installation of a tap position indicator located in the transformer changer compartment at 4kV Unit Substations, and connecting the indicator to the Unit Substation Automation (USA) system.

During the installation of the 4kV unit substation automation project (USA), it was discovered that the design of the tap changer position indicator did not track the tap position accurately. In order to use the USA system to facilitate functions such as voltage reduction and to provide the capability of remotely de-loading transformers during a contingency, the use of remote tap changer control with accurate tracking is necessary.

Justification:

In order to insure obtaining the desired system response to voltage reduction, the 4 kV substations must have their tap changers placed in the 'remote manual position' prior to initiating system voltage reduction in order to prevent automatic operation of the tap changers which would counter the desired voltage-reduction. It is essential for control center operators be able to monitor these conditions accurately. Similarly, the ability to operate taps accurately, with remote indication on 4kV unit substation transformers, is needed so that taps can be lowered while simultaneously monitoring the reduction in loading.

Estimated Completion Date:
2011

Status:
Ongoing

Funding ($000)

Forecast 2009	Forecast 2010	Forecast 2011	Forecast 2012	Forecast Total
132	132	-	-	264

2009 Capital

Project/Program Title	Temperature Gauges
Status	Ongoing
Estimated Service Date	2016

Work Description:
Replacement/upgrade of existing temperature gauges to new electronic gauges at all Unit Substations.

Justification:
This project provides needed information regarding the status of transformers at unit substations to support decisions regarding whether a transformer should remain in service during contingencies. The new electronic gauges provide a much more accurate reading than the existing pressure operated temperature gauges. The electronic temperature gauge would provide a diagnostic tool for determining cooling deficiencies that could be addressed proactively. In addition, these new gauges have a communication port that will allow future connections to remotely monitor the temperature.
Presently, approximately 100 out of 230 units have the electronic gauges. Given the fact that all new transformers will have electronic gauges and we install approximately 7 transformers per year (for load relief and failures), at the rate of 10 temperature gauges per year, the program will complete in 2016.

Estimated Completion Date:
2016

Planning and Budgeting

Units	Cost/unit	Total cost	Units/year	Cost/year
80	$10,000	$80,000	10	$100,000

Each year of the program, we plan to replace 10 temperature gauges per year at an estimated cost of $100K each year. The annual budget includes $70K for labor, $30K for materials and services.

Status:
Ongoing

Funding ($000)

Forecast 2009	Forecast 2010	Forecast 2011	Forecast 2012	Forecast Total
100	100	100	100	400

2009 Capital

Project/Program Title	USS Transformer Replacement
Status	Ongoing
Estimated Service Date	Ongoing

Work Description:
This program is to provide funding to replace failed unit substation transformers. Historically, there has been one 4 kV unit substation transformer failure per year.

Justification:
Due to age, insulation breakdown and other factors, transformers periodically fail beyond repair and need to be replaced with a new unit. Each unit substation is required to maintain the reliability of the 4 kV distribution system.

Estimated Completion Date:
Ongoing

Planning and Budgeting:
Replace one (1) unit substation transformer per year as they fail.

Status:
Ongoing

Funding ($000)

Forecast 2009	Forecast 2010	Forecast 2011	Forecast 2012	Forecast Total
600	600	600	600	2400

2009 Capital

Project/Program Title	4 kV USS Switchgear Replacement
Status	Ongoing
Estimated Service Date	Ongoing

Work Description:
Purchase and replace switchgear 'line-ups' as part of the Unit Substation modernization program. There are approximately 170 unit substation switchgear 'line-ups' that have been in service for more than 40 years. This program is intended to address problems which are related to the aging of this equipment and will include complete switchgear replacements of 40 unit substations over 20 years.

We will be addressing complete switchgear replacement of two unit substations each year.

Justification:
Replacing aging switchgear 'line-ups' with new switchgear will alleviate operational problems and reduce the risk of switchgear failure. Examples of some age-related problems experienced at unit substations are as follows:

- At various substations, structural integrity has been compromised by corrosion of structural components. This has resulted in shifting of the stationary portions of the breaker cubicles, causing a major problem with racking circuit breakers in and out of the cubicles (it sometimes takes 4 mechanics to rack a breaker into and out of position). Alignment of the electrical connections between circuit breaker and cubicle may not mate properly causing excessive heating and failure of the switchgear.
- Serious water leaks have developed in roofs and walls of some of the existing switchgear. The water leaking into the switchgear has caused rust and corrosion conditions within the switchgear.

Replacement of this equipment is a better alternative than repair:

- The purchase price of new switchgear is in the range of $500K with the total cost including overheads to purchase and install a new switchgear line-up coming to approximately $1,100K. The new switchgear will include modern vacuum circuit breakers, microprocessor based protective "smart" relays that better protect our switchgear and feeders, and an indoor climate controlled environment for the equipment to operate. The cost of repairing the old equipment is in the same price range as purchasing new equipment without including the modernization upgrades included in the new switchgear.
- Replacement parts for the older switchgear line-ups that have air-magnetic circuit breakers are expensive compared to new modern vacuum circuit breakers. It costs approximately $25K to retrofit the switchgear for an air-magnetic circuit breaker upgrade . A new vacuum breaker costs approximately $7K.

We will be addressing the switchgear replacement of two unit substations in 2009, New Brighton no. 2 and College Point, for the following reasons to provide further evidence as to why this program is necessary:

New Brighton no. 2 is the oldest switchgear house in Staten Island. Today, its roof and floor panels are rusted allowing water to enter the structure. The rusted floor panels also cause misalignment of breaker connections. Thus both the roof and floor must be replaced.

- College point is one of the oldest switchgear houses in Queens. It has single phase isolated breakers which require three times the amount of maintenance than conventional three phase breakers do. The concrete foundation of the substation is spalding and must be repaired. Additionally, the uneven concrete has caused the breaker carts to be damaged and those must also be replaced. Like New Brighton, the floor panels are rusted causing breaker misalignment.

Estimated Completion Date:
This program will be an ongoing, 20 year program.

Planning and Budgeting
Each new switchgear line-up costs $1.1M to procure and install. The current plan is to install two each year, prioritizing by the urgency of the repairs needed. This project will be coordinated with both the 4kV Breaker Replacement Project and the Unit Substation Life Extension Program to fully repair and properly modernize our unit substations.

Status:
Ongoing

Funding ($000)

Forecast 2009	Forecast 2010	Forecast 2011	Forecast 2012	Forecast Total
2,200	2,200	2,200	2,200	8,800

2009 Capital

Project/Program Title	USS Life Extension Program
Status	New Program
Estimated Service Date	Ongoing

Work Description:
This work involves projects to extend the useful life of unit substations. The two main components of these upgrades are the replacement of air circuit breakers with vacuum circuit breakers and replacement of electro-mechanical protective relays with microprocessor based relays.

This work will require extensive cubicle modifications, new control wiring, verification testing and scheduled feeder outages. Many of these cubicles requiring upgrades will need asbestos and lead abatements during the course of this work.

Justification:
Approximately 90% of the 4kV breakers in the unit substations are still the original equipment that was installed, in many cases, over 40 years ago. Almost all the original 4kV feeder breakers on our system are 1200A air-magnetic type. Due to the age of these breakers many of them have reached, or are approaching, the end of their useful life. In particular, Allis-Chalmers breakers have developed problems with the charging and closing mechanism (AM250B). In this program we will replace all the Allis-Chalmers feeder breakers with the 1200A vacuum-type which has a different and more resilient closing mechanism. In addition, other manufactures breakers with high-maintenance needs, such as GE, ITE, and Westinghouse, will be targeted for replacement.

The existing 4 kV Unit Substations contain equipment which needs to be upgraded to current technology in order to maintain their reliability and functionality. Protective relays currently installed in the unit substations are the electro-mechanical type. With these relays, replacement relays and components are difficult to acquire. As time passes, more labor and resources are spent toward the maintenance of these obsolete relays. Because the new generation microprocessor protection relays are more accurate and reliable we expect they will significantly reduce maintenance costs associated with the antiquated relays. We estimate that once many of these equipment replacements are complete, we can lengthen our maintenance cycle from a 3 year program to a 5 year program and cut our total maintenance labor expenditures for these unit substations by an estimated 15 to 20 percent.

This project will be coordinated with the 4 kV USS Switchgear Replacement Program to ensure the proper upgrades are made with the appropriate priority.

Estimated Completion Date:
This program will be an ongoing program.

Planning and Budgeting
Breaker = $25,000/cubicle
Relays & relay cubicle = $50,000/cubicle

2009 Capital

Breaker replacement:
On our system, we have approximately 180 Allis-Chalmers breakers that should be replaced. On average, the plan will include the replacement of 33-34 breakers per year at a unit cost of $25,000 per breaker amounting to an average annual budget of $845K for this component of the program.

Relay Upgrade:
On average, a unit substation has approximately 5 to 6 cubicles that would require relay upgrades at a unit cost of $50K per cubicle. Approximately two stations per year are planned for total relay upgrades at an average annual budget of $570K for this component of the program.

Summary of program costs

Component	Approx. # of units/yr	Cost/Unit	Cost/yr
Breakers	33-34	$25,000	$845,000
Relays & associated cubicles	11-12	$50,000	$570,000
	APPROX COST/YEAR		$1,415,000

Status:
New Program

Funding ($000)

Forecast 2009	Forecast 2010	Forecast 2011	Forecast 2012	Forecast Total
1,769	1,170	1,361	1,361	5,661

2009 Capital

Project/Program Title	Auto Reclose Bank Breakers at Various Unit Substations
Status	Ongoing
Estimated Service Date	2018

Work Description:
Install / replace transformer secondary breaker (bank breaker) 'auto-reclose' relay at various unit substations.

Justification:
Unit substations, in certain 4kV grids, are supplied through an Automatic Transfer Switch (ATS) in order to automatically provide an alternate supply feeder in the event that the primary supply feeder is out of service. This provides additional reliability to customers in these 4kV grids by mitigating potential "grid collapse" due to the loss of multiple primary supply feeders during contingencies.

In order to take advantage of automatic transfer between primary and alternate supply feeders, the Unit Substation bank breaker must have the capability to "auto-reclose" following transfer. The existing relay that is intended to perform this task, at many unit substations has become unreliable causing the bank breaker to remain open when power is restored to the transformer. When this occurs a field crew must be dispatched to close the breaker. The new electronic relays are also more reliable and rugged that the traditional electro magnetic relays.

Stations equipped with an ATS will be targeted for relay replacement first followed by the remaining stations.

Estimated Completion Date:
2018

Planning and Budgeting:
Each relay costs approximately $21,000 to install. At the requested level of funding, 12 relays are to be installed each year for 10 years.

Status:
Ongoing

Funding ($000)

Forecast 2009	Forecast 2010	Forecast 2011	Forecast 2012	Forecast Total
250	250	250	250	1,000

2009 Operations & Maintenance (O&M)

Project/Program Title	Unit Substation Repairs and Inspection
Status	Pending
Estimated Service Date	April 2009

Work Description:

1. Repairs to nine unit substation foundations undermined by water and frost heaving and SPCC (Spill Prevention Control Countermeasures) improvements.
   - Saxon Woods - transformer moat/drainage and repair undermined switch gear pad.
   - Barnes Lane - replace heaved transformer moat walls and undermined switchgear pad, install driveway and proper drainage.
   - Ferncliff - replace damaged transformer moat wall, install driveway and drainage.
   - Fort Hill - install retaining wall behind unit to stop mud and rock slides into switchgear and make SPCC improvements.
   - Eastchester Creek - SPCC drainage improvements to retaining curb
   - Mohegan - double unit-SPCC drainage improvements to retaining curb
   - Mohegan - double unit-SPCC drainage improvements to retaining curb
   - Woodlawn – SPCC drainage improvements to retaining curb
   - Thornwood - SPCC drainage improvements to retaining curb

2. Repair thirteen concrete pads surrounding our unit stations:
   - Dunwoodie 5
   - Bowman #66
   - Saxon Woods #48
   - Mclean #63
   - Ardsley #1
   - Crestwood #56
   - Thornwood #69
   - Rose Hill #36
   - King St #67
   - Lester Place #76
   - Sommer #2
   - Middletown Rd
   - Green Knolls #60

3. Repair or replace fifteen unit station driveways and sidewalks within and in front of our stations:
   - Rose Hill #36
   - Lake Ave #82
   - Webster #8
   - Lawrence Park #44
   - Flint Park #30
   - Valley Place #30
   - Chester Heights #33
   - King St #67
   - Grassy Sprain #15
   - Manhattan Park #62
   - Grey Oaks #13
   - Beechwood #29
   - Kensico #41
   - Shawnee #103
   - Manursing #74

4. Repair/replace barriers for SPCC containment around 13 for Bronx/Westchester and 23 for Brooklyn/Queens unit substations in the event of an oil leak from the transformer. This will be a continual program rotating between the 182 unit substations in B/W and B/Q. Brooklyn/Queens will also include 11 HTV locations.
   The B/W locations:
   - Beechwood
   - Milton Pt
   - Waverly
   - Barnes
   - Chauncy
   - Pelham
   - Shrub Oak
   - White Plains Rd
   - Hardsdale
   - Drake

- Eastchester
- Zerega
- Primrose

Justification:
Most of the Bx/W and B/Q unit substation are pre-1960 and repairs to the facilities have been minimal. Over time the pads/buildings have fallen into disrepair and also pose flooding risks. Repairs are required at seven unit substation where foundations have been undermined by water and frost heaving and require SPCC (Spill Prevention Control Countermeasures) improvements. Without repairs to the foundations we have placed the station in stress and have rendered the oil containment plan (SPCC) potentially ineffective. In addition, to facilitate the safe and efficient operation of station breaker switching and maintenance, the pads that are cracked and pitted, which does not promote the safe maneuvering of station equipment, need to be repaired. The repairs are essential to ensure public and employee safety. Hazards mentioned above can lead to increased safety risks, including slips, trips and falls with injuries to employees and the public.

Estimated Completion Date:
On-going
Status:
Pending
Funding ($000)

- Repair cost for substation foundations approximately $60,000k per unit
- Repairs for the concrete pads are estimated at $20,000 per unit
- Repairs to driveways and sidewalks are estimated to be $45,000 per unit
- Repair cost for containment average $8,000 per unit

Historical Year (2007)	Forecast RYE 2010	Forecast RYE 2011	Forecast RYE 2012	Forecast Total
0	1,097	1,097	1,097	3,291

2009 Operations & Maintenance (O&M)

Project/Program Title	Replacement of MS 2 Switch Operators in the Micro AT Controlled Automatic Transfer Switch.
Status	
Service Date	

Work Description:
Replace all MS-2 Switch Operators in the S & C Electric Automatic Transfer Switch. The new switch operator will be modified to charge the stored energy mechanism just prior to each close operation. Each switch operator will only be powered by its associated feeder.

Justification:
This modification will remove the stored energy mechanism from the sequence of operation in the Automatic Transfer Switch.

Completion Date:
2015

Planning and Budgeting:
Material Cost estimate:
148 switch operators @ $10,000 = $1.5 million.
Labor Cost: $8,000 per switch operator.
Total Labor: $1.2 million.
Modified switch operators will be purchased in 2008.

Constraints:
Scheduling of feeder outage will define the replacement schedule.

Status:

Funding ($000)

Historical 2007	Forecast RYE 2010	Forecast RYE 2011	Forecast RYE 2012	Forecast Total
-	900	900	160	1,960

2009 Operations & Maintenance (O&M)

Project/Program Title	RMS Task Force
Status	
Estimated Service Date	On going

Work Description:
To establish and deploy an RMS Task force that will primarily focus on maintaining the expected reporting rate of 90% for each network.

Justification:
This group's primary concern will be to maintain the RMS reporting rate at 90% for each distribution network. In addition this group will be responsible for keeping continuity between R&D, SCADA, & company field forces. The RMS Task force will work closely with Engineering and Tech Labs in efforts to develop new technology.

This operation will be deployed system wide as required to address under reporting networks by repairing or replacing RMS units not reporting. The base staffing plan will require the establishment of 7 field crews and associated equipment (trucks, tools, site setup, etc). During high work volumes or for summer preparation, 8 additional crews may be deployed from existing electric operations staff to augment these efforts.

Estimated Completion Date:
On Going

Status:

Funding ($000)

Historical Year 2007	Forecast RYE 2010	Forecast RYE 2011	Forecast RYE 2012	Forecast Total
0	1,820	1,820	1,820	5,460

2009 Operations & Maintenance (O&M)

Project/Program Title	Electric Engineering & Field Support
Status	Volume
Estimated Service Date	1/2009

Work Description:
Electric Operations Engineering's level of technical resources is projected to be insufficient to meet the level of technical support required to complete incremental Capital rate case programs.

Consequential to increased funding and resources allocated for completion of Capital programs in Electric Operations to increase system reliability, ensure public safety, and meet the needs of increasing customer demand, Electric Operations Engineering requests to increase its level of technical resources. To meet these increasing technical resource and engineering needs, Electric Operations Engineering requests 3 supervisors and 12 engineering technicians to perform engineering design, project planning and management, drafting, and analysis, for Electric Operations distribution, including 5 engineering technicians assigned to maps and records capabilities. Additionally, 1 supervisor and 4 engineering technicians will be required for associated field engineering and quality assurance.

Justification:
Incremental increases in Capital projects will require increased human resources for technical design and associated functions.

Estimated Completion Date: Ongoing

Status: Ongoing

Funding ($000)

Historical Year (2007)	Forecast RYE 2010	Forecast RYE 2011	Forecast RYE 2012	Forecast Total
2,844	4,740	4,840	4,840	14,420

2009 Operations & Maintenance (O&M)

Project/Program Title	Electric O&M Vault Repairs
Status	Ongoing
Estimated Service Date	Ongoing

Work Description:
The volume of O&M vault repairs has increased, and is expected to continue to increase, with the increased amount of targeted inspections performed as part of the 5-Year Safety and Reliability program and increased banks-off activity. These repairs include vault grating repairs, the fabrication and replacement of transformer roof slabs, and structural repairs to vault walls and beams. Project scopes are determined by Engineering and completed by company field forces or contractors.

Justification:
Completion of vault repairs is critical to public safety and to lowering Electric Operations banks-off backlog, increasing system reliability. These repairs are further required as part of response to customer complaints and in advance of Transformer Upgrades associated with Energy Services projects.

Vaults are repaired to improve public safety and extend the lives of the assets. Materials used in repairs are of a higher grade than the original materials, (higher PSI concrete, structural integrity coating, waterproofing, etc); there is a definite upgrade to the integrity of the structure after these repairs are made. These repairs and restorative measures expand the life expectancy of the asset.

Planning and Budgeting:
O&M vault repairs are completed by two groups: Construction Management and Subsurface Construction. Construction Management completes Electric Operations large-scale vault repair projects according to engineering layouts.

Subsurface Construction currently utilizes 3 crews per day to complete O&M vault repairs, for an annual cost of approximately $1,052,688; eight additional full-time mechanics and 4 additional vehicles are required to meet increasing demand.

Estimated Completion Date: Ongoing

Status: Ongoing

Funding ($000)

Historical Year (2007)	Forecast RYE 2010	Forecast RYE 2011	Forecast RYE 2012	Forecast Total
2,592	4,549	5,049	5,549	15,147

CONSOLIDATED EDISON COMPANY OF NEW YORK, INC.
CAPITAL AND O&M
PUBLIC SAFETY AND ENVIRONMENTAL
SUBSTATION OPERATIONS

DESCRIPTION	Page #
Reference Substation Operations - Capital - IIP- 2	
Environmental Risk Mitigation	2
Pumping Plant Improvement	4
PURS Supervisory Control & Data Acquisition	7
Reference Substation Operations - O&M - IIP-3	
SF6 Gas Emissions Reduction Program	8
Flame Retardant Clothing	9

Substation Operations – 2009 Capital

Project/Program Title	EH&S Risk Mitigation
Status	Engineering/Construction
Estimated Service Date	On-going.

Work Description:
This program mitigates or eliminates potential risks to the environment and the health and safety of employees and the public by modifying or constructing containment structures around oil filled and high energy equipment that have been identified as having failure modes with serious environmental, health, and safety consequences.

Justification:
Effective risk management is critical to ensuring good environmental stewardship and the health and safety of the public and our employees. The SSO Risk Management Team performs risk assessments and identifies equipment in substations that have a potential for serious environmental impact in the event of a major incident that could result in a release of dielectric fluid or endanger public health and safety. The team performs a detailed review of each condition, identifies the worst case failure mode and consequences, and assigns a priority ranking based on the severity of the incident, the probability of occurrence, and the ability to detect by control mechanisms. Design modifications such as containment structures, oil/water separator systems, and drain modifications are implemented based on the priority ranking.

Estimated Completion Date:
This is an on-going program.

Status:
Dunwoodie Substation – installation of moat floor and drainage around Auto-transformer N1 was completed in August 2007
Ramapo Substation – installation of 2 new phase angle regulator moats was completed in October 2007
East River Substation – installation of a new oil water separator system is in progress with an expected completion of May 2008
Eastview Substation – installation of moats for Reactors #2 and #4 is in progress with an expected completion of April 2008
Millwood Substation – installation of moats for Transformers 1, 2, TA1, and TA2 is out for bid with construction to start in 2008.
Rainy Substation – spill prevention improvements to start in 2008.

Future candidate projects include:
E75th St. – Provide measures to mitigate consequences of a transformer failure
W49th St. - Replacement of the oil water separator inner plates
E63rd St. – Installation of moats for Transformers 3, 13
Leonard St. – Installation of a fire wall for Transformer 14
E179th St. – Installation of containment and walls
Ramapo – Installation of containment moats for Transformers 1, 2, 3, and 4
Fresh Kills – Installation of containment moats for PAR 2 and Transformer 21W
East River – Drainage improvements
Dunwoodie – Retention pond modifications
E29th St. – Installation of moat for Transformers 1 and 4

Substation Operations – 2009 Capital

Funding ($000):

Forecast 2009	Forecast 2010	Forecast 2011	Forecast 2012	Forecast Total 2009-2012
3,500	3,500	3,500	3,500	14,000

Substation Operations – 2009 Capital

Project /Program Title	Pumping/Cooling Plant Improvements
Status	On-going
Estimated Service Date	On-going

Work Description:
This program is a combination of pumping and cooling plant replacement and upgrade programs.

- Upgrades to pumping plant skids and complete pumping plants.

- The circulating pump upgrade program replaces older pumps, pump controls, alarm panels and chart recorders. New programmable logic controls (PLC) and screens will be installed, with sumps and alarms, and variable frequency drive (VFD) controllers. Six plants have already been upgraded in Farragut and Gowanus. The new program would systematically upgrade 4 circulating plants per year, making the plants more reliable and eliminating environmental leaks from the pumps.

- A leak detection system (LDS) will be installed for 345 kV Feeders M54 and M55 and the Public Utility Research Station (PURS) plants will be upgraded under this program. The PURS plants upgrade program includes replacing existing motor control centers with new ones, which will include VFD controls for the oil circulating pumps and also replacing old control panels with state-of-the art control panels. The new control panels will have PLC for controls, alarms, and communication with remote monitoring and start-stop control capability at West End Avenue through the PLC into the new Emergency Management System (EMS). The chart recorders will be paperless and will contain a minimum of 400 days of data and the ability to download to a server.

- The pump house and circulating plant alarm panel upgrade program will replace control and alarm panels at various plants and includes the replacement of chart recorders, pressure gauges, and alarm panels with new resistant temperature detector (RTD) transducers and displays. Some of these locations have gauges that are not functioning properly, paper chart recorders, and obsolete components for which replacement parts that are no longer available. Due to their older design, existing tubing connections create chronic low level oil leaks. Implementation of this program will ensure that correct pressures, tank levels, and alarms are displayed and transmitted, as well as eliminating environmental oil leaks.

- A pump house connectivity program will be implemented. A web-based software application will be used to display pump house data such as tank level readings, crossover valve status, pump status, header pressures, nitrogen tank pressures, alarms and trends remotely via the internet. Funding is needed to install cable, hardware, and upgrade the software.

Justification:
As part of the Company's obligations under a now satisfied New York State Department of Environmental Conservation (DEC) Consent Order, we were required to upgrade existing dielectric fluid facilities to provide greater reliability, equipment oil leak reduction and prevention, early oil loss warning, and remote alarm capability for our pipe-type feeder pressurization plants. Even though this DEC commitment has been met, we intend to continue upgrading our dielectric facilities to achieve environmental excellence and improve plant reliability.

Substation Operations – 2009 Capital

Installation of LDS for 345 kV Feeders M54 and M55 will enhance our leak detection capability for those two feeders.

There are thirty nine (39) existing PURS Plants on 345 kV Feeders M51, M52, 71 and 72, 61, 62, 63, 45, 46, M54 and M55. These PURS Plants have detailed remote monitoring and remote start capability. Any power interruption to any of these plants will cause the plant to shut down requiring an operator to be dispatched to restart the plant. If due to unavailability of manpower, the plant can't be started within a specified time limit, the associated feeder de-rating may be needed.

None of the above PURS Plants have pump speed control capability resulting in increased power consumption during light feeder loads and also during cooler ambient temperature. Also the annunciator panel has become unreliable and is no longer supported by the vendor for spare parts. Additional upgrades are required to address deficiencies noted during the Poletti PURS fire.

Automated controls will allow for automatic remote starts and will maximize the cooling of the feeder, and will allow the plant to operate at maximum efficiency year round. Remote control capability will also prevent any potential de-rating of the associated feeder due to lack of manpower. Paperless chart recorder will eliminate the need to send the operators to 9 unmanned sites each week to change the charts. Enhanced remote monitoring will allow the Shift Manager to make better decisions on the operation of the system during normal and emergency situations.

There are 36 circulating plants on 345 kV and 138 kV transmission feeders, most of which are over 30 years old. The older plants have oil leaks, antiquated controls, chart recorders and alarm panels no longer supported by the equipment manufacturer, making it difficult to obtain replacement parts.

Circulating plants #1, #2, #3, #4 in Gowanus and #9A, 13A in Farragut use a cooling tower heat exchanger. These plants have a system installed that inhibits corrosion and bacterial growth. The treated water needs to be disposed of properly. This excess water is rich in certain solids and dumping it not advisable according to EH&S. The system needs to be upgraded to include a collection/storage tank with an alarm system to prevent chemically treated water discharge. An alternative solution would be to upgrade the heat exchanger to air-type.

Implementation of the pump house connectivity program will allow remote indication and alarms to be accessible via intranet. This will enhance our ability to perform component and system level performance monitoring and trending, improve maintenance on the system, minimize unanticipated failures, and facilitate quicker operator response to ensure system reliability. The system will also provide for rapid analysis of system trends further improving leak detection and response and can also be used to assist in failure analysis.

Estimated Completion Date:
This is an on-going program.

Status:
The following is the 2007 year end status of this program:
Farragut Pumping Plant 6 completed
Hellgate Pumping Plant 1 completed
Fox Hills Pumping Plant 1 continues
Farragut Circulating Plants 12, 17, and 45 completed
Leak Detection System on Feeders M54 and M55 completed
PURS upgrades on Feeders 71/72 and Q11/Q12 completed

Substation Operations – 2009 Capital

The following work is planned for 2008:
Completion of the Fox Hills Pumping Plant 1
West 49th St. Pumping Plants 1, 2
Farragut Circulating Plant 46
Corona Pumping Plant 1

Funding ($000):

Forecast 2009	Forecast 2010	Forecast 2011	Forecast 2012	Forecast Total 2009-2012
8,500	8,500	8,500	8,500	34,000

Substation Operations – 2009 Capital

Project/Program Title	Moore System Replacement for PURS Supervisory Control and Data Acquisition
Status	On-going
Estimated Service Date	2012

Work Description:
This project replaces the Moore analog communication system on all high-pressure pipe type feeders that have Public Utility Research Station (PURS) plants. The Moore system is a 40-year-old technology that is obsolete with no vendor available for replacement parts. Its performance has been steadily degrading with mis-operations that shut down PURS plants which impact feeder power transfer capabilities. The new design will use as its primary means of communications the corporation's CCTN network. It will use the Verizon network for redundancy.

Justification:
The existing Moore analog communication system is unreliable and is past its end of life. It is critical, like protective relay systems, in that it functions properly during feeder faults to stop cooling plant loops. A failure to perform this function will contaminate the feeder and result in a long-term outage to de-contaminate. This system is also required for remote start-up and shut down, alarms, and monitoring of the PURS plants from the Energy Control Center and the Alternate Energy Control Center.

Estimated Completion Date:
This is a multi-year project that started in 2006 with an expected completion date of 2012.

Status:
Supervisory upgrades for Feeders 71, 72, Q11 & Q12 are complete. The engineering and preliminary work for Feeders M51 and M52 will be completed by the 1st quarter of 2008 with equipment delivery by the 2nd quarter of 2008. The M51 Feeder construction will be completed in the 4th quarter of 2008, and the M52 Feeder construction will be completed in the 1st quarter of 2009. The remaining feeders in this program, which are identified as Feeders 61 - 62 - 63, Q35L - Q35M, 45 - 46, and M54 - M55, will be worked on in future years.

Funding ($000):

Forecast 2009	Forecast 2010	Forecast 2011	Forecast 2012	Forecast Total 2009-2012
3,000	3,000	3,000	3,000	12,000

Substation Operations – 2009 O&M

Project/Program Title	SF6 Gas Emissions Reduction Program
Status	On -going
Estimated Service Date	On -going

Work Description:
This program provides for Substation Operations incremental costs for vendor support and material to support an aggressive O&M program to reduce SF6 leaks that will not be addressed by planned Capital program initiatives. Equipment that will be targeted as part of this effort includes the Gas Insulated Bus systems at Dunwoodie, Buchanan, 49th Street Substations & various Transmission Circuit Breakers, Auto-Ground Switches and Circuit Switchers.

Justification:
Substation Operations will aggressively pursue repair of small SF6 gas leaks in order to drive down overall SF6 emissions and achieve environmental excellence. SF6 gas has been labeled a greenhouse gas and is considered one of many man-made contributors to global warming. $200k vendor cost required for future years. Incremental 124k required above the 2007 actual of 76k.

Estimated Completion Date:
On-going

Status:
On-going

Funding ($000)

Historical Year 2007	Forecast RYE 2010	Forecast RYE 2011	Forecast RYE 2012	Forecast Total RYE 2010-2012
76	200	200	200	600

Substation Operations – 2009 O&M

Project/Program Title	Flame Retardant Clothing
Status	On-going
Estimated Service Date	On-going

Work Description:
Substation Operations will continue to implement a program to outfit all field employees with flame retardant clothing. Those employees that have a potential to be exposed to an electrical arc or flash will be required to wear flame retardant clothing. The program will allow for the flame retardant clothing to be issued and laundered to retain its flame retardant properties, with drop-off and collection sites for the exchange of used/laundered clothing. The cost of the clothing is $10.35 per person, per week. There are 1,169 weekly and management field personnel that will require clothing. The total cost of the program is estimated to be: $10.35 (per week) X 52 (weeks) x 1,169 HR's = $629k at 54.2% O&M equates to 341k annually. The $341k annual cost is an incremental 228k compared to the Historic Year (2007 actual) of $113k.

Justification:
OSHA standard 29 CFR 1910.269 requires that all electric power generation, transmission, and distribution employees who may be exposed to an arc or flames wear clothing that does not contribute to the severity of an injury that could be sustained by the employee. This requirement is based on the fact that certain fabrics are easily ignited and can cause burns. Potential for significant injury will be mitigated by the use of flame retardant clothing. Controlled distribution and laundering of this clothing will ensure the flame retardant properties are properly maintained.

Estimated Completion Date:
On-going

Status:
On-going

Funding ($000)

Historical Year 2007	Forecast RYE 2010	Forecast RYE 2011	Forecast RYE 2012	Forecast Total RYE 2010-2012
113	341	341	341	1,023

CONSOLIDATED EDISON COMPANY OF NEW YORK, INC.
CAPITAL AND O&M
PUBLIC SAFETY AND ENVIRONMENTAL
SYSTEM AND TRANSMISSION OPERATIONS

DESCRIPTION	Page #
Reference Transmission Operations - Capital - IIP- 4	
DEC Program Line	2
Environmental Enhancements	3
Reference System & Transmission Operations - O&M - IIP-5	
Manhole Inspections	4
PFT Patrols - New Environmental Program	5

Transmission Operations – 2009 Capital

Project/Program Title	Various – DEC Program Line
Status	Planning
Estimated Service Date	December 2009

Work Description:
In accordance with the New York State Department of Environmental Conservation (NYSDEC) Consent Order dated November 4, 1994 and subsequent modifications, Con Edison committed to install stop joints at the shore manholes associated with submarine crossing of 138 kV and 345 kV feeders. Con Edison committed to complete the installation by 2010.

Justification:
To reduce dielectric fluid leaks.

Estimated Completion Date:
The current schedule places this project completion in 2009.

Status:
Outage to do this work is being coordinated with the installation of Bank 3 at Woodrow Substation.

Funding ($000)

Forecast 2009	Forecast 2010	Forecast 2011	Forecast 2012	Forecast Total 2009-2012
1,750	-	-	-	1,750

Transmission Operations – 2009 Capital

Project/Program Title	Various - Environmental Enhancements
Status	Planning
Estimated Service Date	On-going

Work Description:
Leak Detection Systems are presently installed on several transmission feeders with rapid circulation. There is a need for such systems for static feeders or for feeders with slow circulation. Presently there are two research projects that are addressing this problem. The Advanced Leak Detection System (ALDS) and the Neural Network Leak Detection System. These two systems are in various stages of development. The funding is required to begin a program of installing one or both systems on our transmission feeders once they are proven to be effective.

Justification:
To reduce dielectric fluid spills into the environment by reducing the time required to detect, find and clamp transmission feeder leaks.

Estimated Completion Date:
2010 commencement

Status:
Planning

Funding ($000)

Forecast 2009	Forecast 2010	Forecast 2011	Forecast 2012	Forecast Total 2009-2012
	1,750	1,750	1,750	5,250

2009 System and Transmission Operations – O&M

Project/Program Title	Manhole Inspections
Status	On-going
Estimated Service Date	On-going

Work Description:
Transmission manholes are currently inspected on a four-year cycle in accordance with EO-6054 "Inspection and Preventive Maintenance and Stray Voltage Testing of Pipe Type Cable Systems." The visual inspection includes reviewing the overall manhole structural condition, evidence of dielectric fluid, damaged coating, proper bonding and cathodic protection and the presence of feeder and vault identification tags. Stray voltage testing is also performed. The inspection program will be enhanced to include the removal of coating in the area between the pipe reducer and the manhole wall, allowing for a thorough inspection of the pipe which is susceptible to corrosion.

Justification:
A review of dielectric fluid leak records indicates that the largest number of corrosion leaks on the pipe-type feeder system have occurred inside feeder manholes between the reducer and the manhole walls. The cause of these leaks is atmospheric corrosion, a process that cannot be prevented by cathodic protection, which is effective only on buried or submerged piping.

Estimated Completion Date:
On-going

Status:
On-going annual program

Funding ($000)

Actual 2007	Forecast RYE 2010	Forecast RYE 2011	Forecast RYE 2012	Forecast Total RYE 2010 - 2012
453	950	950	950	2,850

2009 System and Transmission Operations – O&M

Project/Program Title	Perfluorocarbon Tracer (PFT) Patrols
Status	New program
Estimated Service Date	On going

Work Description:
This program involves performing periodic proactive patrols of high-pressure fluid filled transmission feeders with an objective of reducing total dielectric fluid loss through early detection of lower rate leaks.

Justification:
Various means, including automatic detection systems and manual tank level reading and analysis, are used to monitor the nine million gallons of dielectric fluid in our fluid-filled transmission feeder system. While these methods are generally effective in monitoring the system, they are limited in their ability to detect low rate leaks. Proactive PFT patrols will enhance our monitoring of the system, resulting in the earlier detection of leaks and reductions in dielectric fluid loss to the environment. Feeder leak history was reviewed to determine the frequency of PFT patrol on a feeder specific basis.

Estimated Completion Date:
On-going

Status:
This project was approved in the 2008 rate case submittal.

Funding ($000)

Actual 2007	Forecast RYE 2010	Forecast RYE 2011	Forecast RYE 2012	Forecast Total RYE 2010 - 2012
-	600	600	600	1,800

CONSOLIDATED EDISON COMPANY OF NEW YORK, INC.
CAPITAL AND O&M
PUBLIC SAFETY AND ENVIRONMENTAL
ELECTRIC OPERATIONS

DESCRIPTION	Page #
Electric Operations - Capital - IIP-6	
Oil Minders	2
Vented Manhole Cover	3
Street Light Isolation Transformers	4
Electric Operations - O&M- IIP-7	
Dissolved Gas In Oil Analysis (DGOA)	6
5 Year OH Inspection Program	7
5-Year UG Structure Inspection Program	9
Annual Stray Voltage Testing Program	11
Electric Distribution Inspection System (EDIS) Improvements	13
Mobile Stray Voltage Testing - Sarnoff Devices	14
Network Transformer Vault Cleaning Program	16
Central Quality Assurance	18

2009 Capital

Project/Program Title	Oil Minders
Status	On Going
Estimated Service Date	On Going

Work Description:
This program will install approximately 350 new oil minders each year at underground network transformer structures to mitigate possible oil release into the environment from leaking transformers.

The 'oil minder' was developed to prevent the pumped discharge of dielectric fluid from network type transformers into the sewer system. In addition to preventing oil discharge into the sewer system, the control system will register an alarm in the local control room through the Remote Monitoring System (RMS) whenever oil is encountered. This remote warning signal will facilitate early detection and clean up associated with leaking transformers.

Justification:
This program is designed to mitigate the environmental impact of dielectric fluid from network type transformers. We have been installing oil minders since 1997 when Con Edison made a commitment to the DEC to address dielectric fluid leakage from underground transformers. Since 1997 we have installed approximately 350 oil minders per year, addressing the existing transformers on the system that have the highest probability of leaking. So far we have approximately 4,000 oil minders installed in our system at underground vaults and manholes where sump pumps are utilized to reduce flooding in the underground structure. We prioritize oil minder installations by first addressing older transformers which are more likely to leak and then addressing new transformer installations, several hundred of which are added to our system every year. We have found oil minders to be very effective at intercepting oil before it enters the sewers system, and thus plan to continue this program at the same rate in years to come (approximately 350 installations per year) and to prioritize older transformers and new underground installations accordingly.

Estimated Completion Date:
Ongoing

Status:
Ongoing

Funding ($000)

Forecast 2009	Forecast 2010	Forecast 2011	Forecast 2012	Forecast Total 2009-2012
$600	$600	$600	$600	$2,400

2009 Capital

Project/Program Title	Vented Manhole Cover
Status	Ongoing
Estimated Service Date	2009

Work Description:
The Scope of Work includes the installation of vented metal Manhole covers. The program shall entail replacing all covers with vented covers and the replacement of the frames over the next year. There are ~9,000 solid manhole covers pending replacement in 2009. Of these, ~ 6000 covers are square in shape and the Company is in the process of testing the new vented design. There are an additional ~3000 covers that require significant effort for cover replacement that includes re-grade, re-paving and replacement of the frame. The material and labor costs associated with replacing the remaining round covers is significantly more than the remaining square covers.

Justification:
The installation of vented Manhole covers will help to reduce the buildup of combustible gases associated with secondary events thereby reducing the severity of underground events and enhancing public safety. The installation of vented manhole covers has successfully validated the effect of ventilation in mitigating secondary events. We are now working on the exceptions and moving forward to complete the program.

Estimated Completion Date:
2009

Status:
On-going.

Funding ($000)

Forecast 2009	Forecast 2010	Forecast 2011	Forecast 2012	Forecast Total
10,000	-	-	-	10,000

2009 Capital

Project/Program Title	Streetlight Isolation Transformer
Status	
Estimated Service Date	

Work Description:
Over the next 9 ½ years Con Edison will purchase and install up to 163,000 isolation transformers and associated connectors in underground structures supplying streetlamps and traffic lights in New York City and Westchester. The installation of the isolation transformer will eliminate nearly 100% of expected stray voltage conditions. (3,973 fewer conditions per year based on 2007 data).

Justification:
Isolation transformers create an isolated ungrounded circuit for each streetlight, a double-contingency design. This protects workers and the public against electric hazards due to cable failure, poor neutral connections or ineffective grounding which are responsible for the large numbers of stray voltage conditions found each year on streetlights. Because the circuit is ungrounded, current will not seek ground through any alternate path. In fact, with an isolation transformer installed, a person can safely handle the energized conductor bare handed. Also, as part of the isolation transformer installation process, unsafe connectors discovered in lamp bases will be removed and replaced with waterproof fuse holders and crimp connectors.

Estimated Completion Date:
Program is scheduled to begin in 2008 rate year and be completed by 2017.

Status:
Pending approval.

Funding ($000):

	Forecast 2009	Forecast 2010	Forecast 2011	Forecast 2012
Rep Crew Installations	4,000	4,000	4,000	4,000
Insp Crew Installations	6,000	12,000	12,000	12,000
Total ISO Installation Visits	10,000	16,000	16,000	16,000
ISO Installed	12,465	19,943	19,943	19,943
ISO Purchases	18,500	18,500	18,500	18,500
Material Cost ($1K)	$3,975	$3,975	$3,975	$3,975
Labor Cost ($1K)	$3,689	$6,371	$6,371	$6,371
Program Admin	$150	$150	$150	$150
Total Cost	$7,814	$10,495	$10,495	$10,495

2009 Capital

Assumptions:

- There are 161,000 streetlight and traffic lights fed from an estimated 129,000 structures; each structure feeds an estimated 1.246 lamps.
- Total purchase of ISO transformers includes 10000 units of additional inventory for future new construction and ongoing replacement needs, for a total of 171K units.
- Dedicated inspection forces will complete 3 jobs per day with 2 man crews at $84 manhour rate. This cost includes the inspection, but is charged to the capital ISO program.
- Streetlight repair crews will use and incremental 1.5 hours extra with a 2 man crew at $84 per hour, since they have access and inspection charged to the repair job.
- ISO purchases will be 168,300 1200VA units at $201 ea (loaded cost), 2200 2200VA units at $355 ea (loaded cost) and 500 8000VA units at $825 ea (loaded cost) for a total of 171,000 units. Larger units are for identified locations with greater loads such as large intersections or series circuits feeding multiple lights.

2009 Operations & Maintenance (O&M)

Project/Program Title	Dissolved Gas in Oil Analysis (DGOA)
Status	Ongoing
Estimated Service Date	Ongoing

Work Description:
When energy is discharged, a chemical reaction can take place, breaking down the dielectric properties of the insulating oil, thereby creating gas molecules at a much faster rate than during normal operation. The results of DGOA testing show the types and levels of the gas build up in the oil, and each gas or combination of gasses can be used to identify the type of electrical fault that created it. Based on the level of the various gases, we can determine if a transformer is being affected by high currents and high temperatures, low energy, or flashover without high current. If the Total Combustible Gas (TCG) content exceeds the max PPM level or if there is an increase of 5% or more, it could be indicative of a major fault.

Justification:
One of the main goals of the Equipment Group is to preemptively identify possible trends and failure patterns in electric distribution equipment to ultimately mitigate the threat to public safety and to reduce the corporation's liability due to damages from potentially violent transformer failures or customer outages. We have been tasked by the Ombudsman to, "... devote all necessary resources to reduce, to an absolute minimum, the threat of transformer failure. This effort should include: a) Continued implementation of all present transformer failure identification and mitigation programs, b) Continued support of research and development to identify new strategies to deal with this problem, and c) Monitor progress to meet the goal of reducing OA's to validate effectiveness of the program.

Estimated Completion Date:
Completion of the initial DGOA sampling of the approximately 25,000 network transformers currently online is projected by December 2010, however, this program is ongoing, and some units require multiple DGOA samples to determine changes in the accumulation of gasses.

Status:
Program started in 2006. As of 2007 year end, 9,578 transformers have been sampled, of which 101 were removed from service due to elevated gas levels.

Funding ($000)

Historical Year (2007)	Forecast RYE 2010	Forecast RYE 2011	Forecast RYE 2012	Forecast Total
$3,745	$3,941	$3,966	$3,990	$11,897

Alternatives:
Reduction/elimination of this program would impact the benefits to improved public safety and reduced corporate liability associated with Dissolved Gas in Oil Analysis.

2009 Operations & Maintenance (O&M)

Project/Program Title	Overhead Inspection Program
Status	
Estimated Service Date	April 2009

Work Description:
A visual inspection is conducted on all Con Edison owned or joint use wooden poles, approximately 282,000, in the five boroughs of New York City (less Manhattan) and Westchester once every five years.

Items identified for the inspections are: Pole Condition, Oil Leak, Primary Hardware or Riser Damage, Secondary Hardware or Riser Damage, Insulator Damage, Tie Wire Damage, Ground Rod or Wire Damage, Guy Wire Damage, Wire Down, Surge Arrestor Damage, Insufficient Wire Clearance.

Upon discovery of certain higher priority inspection defects (i.e., Oil Leaks, Con Edison Wire Down and Pole damaged), contractors are required to make immediately notification to Con Edison – the Call Center. The area must then be safeguarded until relieved by Con Edison personnel. Other inspection findings are to be recorded and submitted to Con Edison on a regular delivery. Contractors are required to meet all the quality control requirements for the program.

Justification:
On January 5, 2005, the New York State Public Service Commission issued its "Order Instituting Safety Standards" to examine the safety of electric transmission and distribution systems. The safety standards include requirements that electric utilities inspect all of their electric facilities once every five years.

The PSC adopted a performance mechanism to ensure utilities focus on safety and compliance with safety standards. Failure to comply with the testing and inspection schedule quota will result in revenue adjustment penalty equal to 75 basis points on the company's earning.
In 2005, the Company completed all the OH Inspections under a capital program that entailed collecting an inventory of all the attachments and collecting GPS coordinates for all the OH poles in addition to the inspections.

In 2008 Company has initiated the OH inspection program in order to condense the time period between subsequent inspections of each pole and timely identification and completion of repairs. In addition to the PSC Order that necessitates the annual program the Company expects significant improvement in system reliability through timely completion of primary and secondary repairs associated with the program.

We are planning to inspect 20% of the system per year in order to inspect all of our overhead facilities once every five years The unit cost of inspection per pole is estimated to be fifty three dollars; this cost includes inspections, response, repairs and support. The total funding for the rate case is $9,678 million at $3,226 million per year.

	Unit Cost Per Pole	2009
Contractor Inspections	$5.16	$310
Response & Repairs	$42.02	$2,521
Support	$6.59	$395
Total	$53.77	$3,226

2009 Operations & Maintenance (O&M)

Estimated Completion Date:
November 30th each year

Status:

Funding ($000)

Forecast 2009	Forecast 2010	Forecast 2011	Forecast Total
3,226	3,351	3,482	9,678

2009 Operations & Maintenance (O&M)

Project/Program Title	UG Inspection Program
Status	Ongoing
Estimated Service Date	

Work Description:
The New York State Public Service Commission order Instituting Safety Standards requires Consolidated Edison to perform a detailed inspection on approximately 272,027 Underground Distribution Structures. The latest Specification detailing the inspection process can be found in the Distribution Engineering Website EO – 10359 Periodic Underground Distribution Structure Inspections. Con Edison specifications require that the contractor inspect the outside of the structure for tripping hazards, such as, cover damage and variance from street grade. The contractor then tests the cover for stray voltage, removes the cover, enters the structure, and visually inspects all cables and connections (this includes determining the condition of cables and crabs). The contractor tests all lead sheath secondary and service conductors and all accessible metallic conduits for stray voltage.

Justification:
The New York State Public Service Commission has issued an Order Instituting Safety Standards by completing a rigorous inspection program of Consolidated Edison's Underground Distribution System. The annual performance target will be based on the percentage of the average number of underground facilities in order to comply with the Five-Year Inspection Cycle.

First Year Inspection Goal	85% of annual target
Second Year Inspection Goal	90% of annual target
Annual Inspection Goal thereafter	95% of annual target
Fifth Year Inspection Goal	100% of all facilities to be inspected

Failure to achieve the annual performance target for inspections shall result in a rate adjustment of 75 basis points.

At the end of 2007 the Company completed 126,000 cumulative inspections since the beginning of the program in 2005. During this time period we completed 236,000 gross inspections. Between 2008 and 2009 the Company must complete the remaining 149,000 inspections in order to be in compliance with the PSC Mandate and avoid any rate adjustments. In 2008 the Company plans to complete 75,000 inspections through a combination of contractor and company forces. In 2009 the Company is estimating to complete the remaining 59,000 inspections.

The cost breakdown is as follows:

	Historical Year - 2007		2009	
	Number	Cost	Number	Cost
Company Inspections & Repairs	36,300	**$12,322**	30,000	**$12,376**
Contractor Inspections & Repairs	0	**$0**	29,000	**$11,040**
Contractor QA/QC	0	**$0**		**$412**
Total	36,300	**$12,322**	59,000	**$23,289**

2009 Operations & Maintenance (O&M)

Status:
Ongoing

Funding ($000)

Historical Year (2007)	Forecast RYE 2010	Forecast RYE 2011	Forecast RYE 2012	Forecast Total
12,322	23,829	23,691	23,691	71,211

2009 Operations & Maintenance (O&M)

Project/Program Title	Annual Stray Voltage Testing Program
Status	Ongoing
Estimated Service Date	Jan 1 to Nov 30

Work Description:

Perform stray voltage testing of all electric facilities, approximately 742,000, that are accessible to the public.

The Underground Testing applies to all Con Edison owned subsurface and URD structures on the distribution system, approximately 278,000, in the five boroughs of New York City and Westchester.

The Underground Testing applies to all Con Edison Transmission Manholes, approximately 1,700, in the five boroughs of New York City and Westchester.

The Overhead Testing requires to field all Con Edison owned or joint use wooden poles, approximately 282,000, in the five boroughs of New York City (less Manhattan) and Westchester, and to test any metallic attachments that are accessible to the public.

The Streetlight Testing applies to all New York City DOT owned metal streetlights and traffic signals, approximately 182,000, in the five boroughs of New York City and Westchester.

Upon discovery of stray voltage, contractors are required to make immediately notification to Con Edison – the Call Center. The area must then be safeguarded until relieved by Con Edison personnel.

The Call Center upon receiving the phone call by the contractor, will create a trouble ticket (AKA B-Ticket) which would automatically be generated at the respective Control Center who will in turn dispatch an emergency crew to respond to the stray voltage location.

The Emergency crew (AKA Troubleshooter) upon arrival will release the contractor on site and begin to investigate and eliminate the root cause of the stray voltage reported.

Locations that the Troubleshooter could only perform temporary repairs are referred to the corresponding Construction Department for permanent repairs follow up.

An additional Electrician Contractor is hired to support the Emergency Operations in responding streetlight stray voltage B-Tickets.

Contractors are required to record test results electronically in the field, conduct field audits of random samples, and then upload the quality checked data via remote access to Con Edison LAN periodically. Contractors are required to meet all the quality control requirements for the program.

Contractors are responsible for purchasing approved voltage detectors for stray voltage testing specified in the Con Edison specifications.

In addition to contract oversight (mainly contractual compliance) by Con Edison Construction Management (CM), CM is responsible to perform work-in-progress as well as post work quality assurance audits to ensure the accuracy and completeness of the test results, proper work management and safety compliance.

Con Edison Central Quality Assurance (CQA) will also perform random post-work quality assurance audits to ensure the accuracy and completeness of the test results.

Justification:
On January 5, 2005, the New York State Public Service Commission issued its "Order Instituting Safety Standards" to examine the safety of electric transmission and distribution systems. The safety standards include requirements that electric utilities test all of their publicly accessible transmission and distribution facilities for stray voltage and inspect all of their electric facilities once every five years. A full round of stray voltage testing is to be completed by November 30, 2005. Subsequent annual testing shall be completed by November 30, each year.

The safety standards and requirements are: 1) Perform annual stray voltage testing of all utility-owned electric facilities that are accessible to the public. 2) Guard all stray voltage detected locations until made safe irrespective of whether the positive stray voltage conditions are the responsibilities of the utility company or non-utility party. Permanent repairs must be made within 45 days, except in extraordinary circumstances. 3) Analyze stray voltage conditions and causes, and develop measures to prevent occurrences. 4) Develop a quality assurance (QA) program to ensure timely and proper compliance with the safety standards. 5) Track and maintain records for inspection and stray voltage testing dates and results for every facility tested and inspected. Records must be readily accessible and searchable, continuously updated, and subject to PSC audit as well as public review. 6) Certify the completion and results of inspections and stray voltage tests and that all unsafe conditions are remedied. The PSC adopted a performance mechanism to ensure utilities focus on safety and compliance with safety standards. Failure to comply with the testing and inspection schedule quota will result in revenue adjustment penalty equal to 75 basis points on the company's earning.

In 2007 the average unit cost of testing per facility was $10. In 2008 the average unit cost for testing is estimated to be $12 per facility. The justification in the increased O&M costs for the annual stray voltage testing programs is warranted due to the following reasons:

- Increased per unit testing cost by contractors – Based on the 2008 awarded contracts, the average per unit testing cost has increased by $1.4 per facility.
- Increased detection rate of stray voltage events, specifically streetlights, which require additional contractor resources for standby and contractor electrician to supplement the control center resources – the expected increase due to retention of additional contractor resources is expected to be $0.4 per facility.

Estimated Completion Date:
November 30th

Status:
Ongoing

Funding ($000)

Historical Year (2007)	Forecast RYE 2010	Forecast RYE 2011	Forecast RYE 2012	Forecast Total
$7,354	$8,892	$8,892	$8,892	$26,676

2009 Operations & Maintenance (O&M)

Project/Program Title	EDIS Improvements
Status	Ongoing
Estimated Service Date	Ongoing

Work Description:
The Electric Distribution Inspection System (EDIS) will require Information Resources technical support to develop new functionality, correct bugs, and improve reporting capability. Some of the new functionality will include developing a process to migrate data collected from existing inspection programs such as the Inspection & Treatment of wood pole assets and stray voltage testing performed by contractors. This data migration will require significant data analysis and cleansing before being uploaded to EDIS. An audit trail module needs to be developed to track who and why data changes were performed. IR tech support will also be necessary to develop customized reporting and to accommodate ongoing enhancements based on engineering specifications.

Justification:
EDIS is a new product that will require improvements as more users come online. It is expected that approximately 450 wireless laptops will be accessing EDIS by April of 2007, with more coming on in 2008. This does not include the users that will be accessing EDIS from workstations.

Estimated Completion Date:
Ongoing

Planning and Budgeting:
It is estimated that one full time IR consultant will be required each year to develop new functionality, correct bugs, and improve reporting capability per year.

Status:
Ongoing

Funding ($000)

Actual 2007	RYE 2010	RYE Forecast 2011	RYE Forecast 2012	Forecast Total
0	200	200	200	600

2009 Operations & Maintenance (O&M)

Project/Program Title	Mobile Stray Voltage Detection (SVD)
Status	On-going
Estimated Service Date	2009

Work Description:

To scan the U.G. electrical distribution system in the Con Edison service territory for stray voltage utilizing mobile electric field detection. Stray voltages found are safe-guarded until repair crews mitigate the stray voltage conditions.
Upon detecting the presence of an electric field by the mobile detector, the testing contractor is required to the conduct field testing to locate the source of the electric field. Upon discovery of stray voltage, contractors are required to make immediate notification to Con Edison Call Center. The area is then coned-off and safeguarded until repair crews respond to the location.
The Call Center upon receiving the phone call by the contractor, will create a trouble ticket (AKA B-Ticket) which would automatically be generated at the respective Control Center who will in turn dispatch an emergency crew to respond to the stray voltage location.
The Emergency crew (AKA Troubleshooter) upon arrival will begin to investigate and eliminate the root cause of the stray voltage reported. The Emergency crew releases the contractor safe-guarding the location. Locations that the Troubleshooter could only perform temporary repairs are referred to the corresponding Construction Department for permanent repair follow up.
Due to the volume of the work generated by the mobile detection vehicles, Electrician Contractors are employed to support the Emergency Operations in responding to streetlight stray voltage B-Tickets.
Con Edison Construction Management (CM) performs work-in-progress as well as post work quality assurance audits to ensure the accuracy and completeness of the test results, proper work management and environmental health and safety compliance.

Justification:

This program has made a significant contribution in improving public safety. In 2007, 4 routine surveys and 1 post storm survey of the underground system were completed in addition to a 5th survey of Manhattan and the underground areas of the Bronx. A total of 22,592 miles were covered and 4,596 stray voltages were detected in 2007.

Since the beginning of the program in 2005 the mobile detectors have covered approximately 40,000 miles and completed 8 full system scans in addition to numerous targeted scans on parade routes and special events such as New Years in Times Square. A total of 7,440 stray voltages have been detected since the inception of this program. The mobile stray voltage program has been the most significant contributor to the 80% reduction in electric shocks that the Company is responsible for over the last three years. The program has significantly contributed to public safety by detecting 4,449 stray voltage conditions that the Company was not responsible for. This represents 60% of all the total stray voltages detected.

In the rate year ending 2009, 12 scans of the underground distribution system will be completed and approximately 57,000 miles will be covered. The increase in costs to conduct more scans of the system and the associated site-safety and emergency response requirements result in the overall increase in cost of the program. Below is a summary of the historical 2007 expenditure and the 2009 rate case request:

2009 Operations & Maintenance (O&M)

	2007	2009
Operations	$8,673,264	$17,619,586
Emergency Response	$2,472,960	$2,962,714
Support	$175,076	$485,000
Total	$11,321,299	$21,067,299

Estimated Completion Date:
Each year's program will begin in January and be completed by December.

Status:
Ongoing

Funding ($000)

Historical Year (2007)	Forecast RYE 2010	Forecast RYE 2011	Forecast RYE 2012	Forecast Total
$11.3 M	$21.0 M	$22.0 M	$23.0 M	$66.0 M

2009 Operations & Maintenance (O&M)

Project/Program Title	Network Transformer Vault Cleaning Program
Status	New
Estimated Service Date	2008

Work Description:
Develop a systematic program to clean all outside vault locations on a 5 year cycle. All debris and dirt would be removed from the transformer, associated equipment and its structure. To be included are sumps, weep holes, clear drains (if connected to sewer lines), clean dirt and debris from cooling fins and underneath units.

Justification:

- Corrosion is the number one cause for transformer failures. Decreasing the amount of debris in the vaults reduces the agent to store moisture.

- The ANODE installation program requires the anode to be placed solidly on concrete and attached to the metal of the transformer, in most cases this can not be achieved without a thorough structure / transformer cleaning. Cathodic protection extends the life span of the transformer. Many transformers are in need of anode installation.

- As demand on our Secondary Network Infrastructure increases, more emphasis must be placed on ensuring the reliability of transformers and network protectors. As a responsible company, this program would address extending the life span and integrity our capital equipment. Transformer performance diminishes when it cannot cool properly, the Vault Cleaning Program will help keep the equipment and structure free of debris, which in turn will improve the equipments overall performance.

- The Vault Cleaning Program addresses public safety. Removing debris and other degrading material from the vault improves the transformer and associated equipment integrity. Clearing drains and sump pump pits allows water to freely leave the installation and therefore not allowing the water to attack the integrity of the capital equipment in the structure. Stray voltage, a major concern, would be reduced because there would be less conductive material to track to a grating or another viable source. The transformer when free of water and debris is less likely to fail violently.

- In addition, this program would improve our ability to better adhere to spec compliance. Most transformer manholes (TM) and vault submersibles (VS) are difficult to clean between the walls of the vaults and the transformer fins. Water and daily accumulation of debris diminish the equipment's performance and lifespan. Transformer fins are used to cool the transformers and when they are clogged with dirt and debris, their ability to cool is significantly diminished.

Budgeting and Planning:

- Each Electric region will be funded for additional supervision. Supervisors will be responsible for managing the contractors work load. Due to the limited number of network transformers in Staten Island the other regions will support their needs.

- Work with Purchasing to extend the existing Sub Surface cleaning purchase order or create a new purchase order for exclusive use with this proposed program.

- Track all completed work using the Vactor Services system.

2008 Rate Case Program Proposal

ESTIMATE OF WORK ORDER TO PROVIDE THOROUGH CLEANING OF TRANSFORMER STRUCTURES ON A 5 YEAR CYCLE
Scope of work: remove all debris from floors and walls, if sump exist clean out, connected installations clean weep holes, if connected to sewer clear drain lines, clean dirt & debris from fins and underneath units.

Data as of 02/07.

Transformers :	Outside Units			Units to be cleaned annually				
				2008	2009	2010	2011	2012
Manhattan	8373	(+ 1% load growth	8373 / 5 years =)	1691	1708	1725	1742	1759
Queens	5545			1120	1120	1120	1121	1120
Brooklyn	6285			1257	1257	1257	1257	1257
Bronx	2884			578	578	578	578	579
Westchester	1741			350	350	350	350	351
Staten Island	259			51	51	51	51	52
TOTALS	25087		Number of days :	245	245	245	245	245
			Number of crews:	7	7	7	7	7
			Expenditures:	$5,488,000.00	$6,208,300.00	$6,208,300.00	$6,208,300.00	$6,208,300.00
		Con Ed Labor Support Expenditures:		$756,000	$786,240	$817,690	$850,397	$884,413
			Annual Total Expenditures:	$6,244,000	$6,994,540	$7,025,990	$7,058,697	$7,092,713

Divide Total Population over 5 years, that sum divided by an average of 3 structures per crew/day, will give us the number of contractor crews required. *Times this by daily crew rate including average waste disposal charges.* $34,415,939.86

The current PO rates are valid through October 31,2008

Daily Crew Rate Mon-Fri:	$2,000.00
Daily Crew Rate Sun:	$2,400.00
Waste per ton:	$200.00
Transportation charges:	$600.00
Human Resources:	7 Supervisors, 2 Clerical = $756,000
Equipment - XM:	7 Vans = $195,000, 7 Computers = $50,000, 7 Laptops = $35,000

Estimated Completion Date: Ongoing

Status: New

Funding ($000)

Historical Year (2007)	Forecast RYE 2010	Forecast RYE 2011	Forecast RYE 2012	Forecast Total
115	6,951	7,697	7,724	22,372

2009 Operations & Maintenance (O&M)

Project/Program Title	Electric Operations – Quality Assurance
Status	
Estimated Service Date	

Work Description:
Create a centralized Quality Assurance (QA) for all phases of Electric Operations. Work will include conducting ~4000 field inspections each year to ensure work is completed with Company construction standards. The QA group will also conduct ~60 in-depth reviews each year that will focus on compliance with procedures.

Justification:
The Electric Operations Quality Assurance mission is to improve worker and public safety. Recent events adverse to public safety could all have been avoided with better adherence to workmanship standards and more efficient work processes.

> An eight-year old girl was shocked in Staten Island on 5/29/06. The cause was the phase and neutral connections were reversed in the streetlight base when Con Edison replaced the service earlier this year.
>
> At 3rd Street and 4th Ave on 2/15/06 in Brooklyn, an 80 lb. dog walked over a wet section of sidewalk that was energized with 74 volts. The dog was killed by what was discovered to be an abandoned streetlight service.
>
> On 2/12/06 at 251 W 42 St a dog and four people were shocked by a service box cover. A secondary cable was found with deteriorated insulation making electrical contact with the service box cover. The insulation deterioration was due to an improperly sealed cable.

The Electric Operations Quality Assurance Department is an independent organization that reports to the Vice President of Engineering and Planning in Electric Operations. The organization is responsible for conducting field inspections, performing reviews (program audits), mitigating potential violations, and improving work practices to ensure that the Company is in compliance with Federal, State and City codes as well as internal operating procedures and specifications. QA personnel will report in their reviews and inspections any best practices as well as violations observed. As part of the review, QA will recommend corrective actions to the violations found and will follow-up periodically to verify that the recommendations are implemented.

A representative of QA will participate on Specification Compliance teams in Electric Operations. Should a significant electric incident occur, a representative from QA will act as a Chairperson to assemble an incident review committee that will determine the root cause of the incident and provide lessons learned for all operating organizations to hopefully avoid future incidents. A representative from QA would also be part of the Operating Error Review Committee in each region. Furthermore, as part of the review process, QA representatives will work with the regional operating areas to identify ways they can perform work processes more efficiently and productively to accomplish Corporate goals.

The QA Department will foster a professional atmosphere where problems are identified and resolved on an ongoing basis. Quality assurance is to be one of the driving forces that ensure that corrective actions and work practices improve efficiency, thereby increasing productivity, as well as maintaining the integrity of the electric distribution system. The Electric Operations QA Program is to be continuously updated to reflect changes in the electrical codes and industry best practices. In addition, Quality Assurance will play an active role by working collaboratively with the Public Service Commission to resolve any issues where ambiguity may exist in the interpretation of electrical codes. It is the mission of QA to extend these efforts beyond the primary responsibility for achieving full compliance with Federal, State and City codes.

Quality Assurance personnel must be team-oriented and must develop a professional relationship with the operating groups, regulatory agencies and inter-utility committees. Members of QA must be viewed not only as specialists, but also as facilitators empowered to accomplish Corporate and Departmental goals. Each QA representative will be cross-trained in various operating disciplines, which will allow for conducting reviews and providing input in any given area.

The Electric Operations Quality Assurance Section will follow the successful model established by our Company Gas Group; with the exception of the larger staffing required by EO to cover the entire CECONY service territory and greater diversity of tasks that comprise Electric Operations work.

The Gas Group is heavily regulated by the Public Service Commission (PSC) code which mirrors Federal Guidelines. The PSC has seven engineers assigned to the Gas Department. Their role is to audit Gas on a regular basis. As a result, the QA Department was established sometime in the 1970s as a self-assessment/self-police group for Gas.

The Gas QA group reports directly to a VP. The group has nine Project Specialists (Band 2H) reporting to a Section Manager who in turn reports to a Department Manager. The Department Manager is also responsible for the Development Lab where faulty specimens are analyzed and new equipment is tested. The Project Specialists are responsible for performing the actual inspections. They are each equipped with a real-time communication device, a Lap Top, and a take home vehicle.

Each Gas Project Specialist is assigned responsibility to complete approximately 12 program reviews per year. The inspections consist of reviewing procedures, paperwork, field inspections and post work inspections. A detailed report with recommendations is issued at the end of the inspection to the Senior VP, VPs, GMs and Managers. Copies of the reports are made available to the PSC. The Project Specialists are also responsible for responding to gas incidents and investigating the incident in addition to conducting other miscellaneous inspections.

Once a report has been issued by QA, the responsible Gas areas have two weeks to respond to the recommendations with actions to be taken and a timetable to complete each recommendation. A follow up sheet is developed and if the actions are not completed, a citation is sent first to the GMs with a copy to VP. The second citation goes to the VPs copy to the Senior VP. All corrective actions are tracked, through completion and resolution, in a Microsoft Access database.

Presently, QA activity is conducted by Field Engineering groups as time allows. In addition, these Field Engineering groups report to the same officer as the groups that conduct the work. The new QA group will report to will be independent of the officers of groups conducting the work and will focus 100% of their time on improving work quality.

Estimated Completion Date:
This is an on-going program.

Status:
Initial staffing of the QA began in the first quarter of 2007. Staffing is divided into two phases. Phase One staffing included 21 people and was completed in the second quarter of 2007. Phase Two staffing will begin in the first quarter of 2008 and continue into the second quarter of 2008.

Funding ($000)

Historical Year (2007)	Forecast RYE 2010	Forecast RYE 2011	Forecast RYE 2012	Forecast Total
190	4,587	4,587	4,587	13,761

CONSOLIDATED EDISON COMPANY OF NEW YORK, INC.
CAPITAL AND O&M
STORM HARDENING AND RESPONSE
SYSTEM & TRANSMISSION OPERATIONS

DESCRIPTION	Page #
Reference System & Transmission Operations -O&M - IIP-5	
Improve Overhead Transmission Restoration Capability	2

2009 System and Transmission Operations – O&M

Project/Program Title	Improve Overhead Transmission Restoration Capability
Status	New program
Estimated Service Date	2012

Work Description:
Several options to improve the company's ability to restore overhead transmission lines on a temporary basis are being evaluated. One concept involves purchasing additional temporary structures and associated materials that are designed to restore most lines on our system, storing them at company locations in special containers, and initially training company personnel in their use. Commitments from qualified contractors with the expertise, personnel, and equipment to install the structures would be obtained.

Justification:
The overhead transmission system is vulnerable to natural disasters including hurricanes, tornadoes, and terrorism. The ability to quickly and temporarily restore certain feeders in parallel with a permanent restoration effort is extremely important in the event of a major problem on the transmission system. An effective means of achieving this on the company's system is via the use of temporary guyed lattice structures. A response to a major event would require more knowledgeable and experienced personnel, specialized equipment, hardware, and structures than the company possesses. The Company is purchasing two new units in 2008, three in 2009, three in 2010 and one in 2011. Based on engineering studies, nine temporary towers may be required if there is catastrophic damage on the most vulnerable part of the overhead transmission system.

During an event the ability to quickly expand the skilled overhead transmission workforce and access long-lead-time materials would be important to the company's restoration effort because in-house overhead transmission expertise and capability is limited. While the transmission system is relatively small, it is one of the most critical in the nation. This program would significantly improve the company's ability to restore the overhead system after a major incident. This on-going project is necessary as more stringent system reliability regulations are currently being considered by the Federal Energy Regulatory Commission (FERC) and North American Electric Reliability Corporation (NERC).

Status:
This project was approved as a new project in the 2008 Rate Case submittal.

Funding ($000)

Actual 2007	Forecast RYE 2010	Forecast RYE 2011	Forecast RYE 2012	Forecast Total RYE 2010 - 2012
-	700	700	250	1,650

CONSOLIDATED EDISON COMPANY OF NEW YORK, INC.
CAPITAL AND O&M
STORM HARDENING AND RESPONSE
ELECTRIC OPERATIONS

DESCRIPTION	Page #
Reference Electric Operations - Capital - IIP-6	
Osmose (C Truss) Program	2
Anderson Switch Replacement	4
Autoloop Reliability	5
Aerial (Okonite) Cable Replacement	9
#4 and #6 Self Supporting Wire	10
ESCO Switch Replacement (Kyle)	12
33 kV Interruptible Switches	14
Three Phase Gang Switch Inspection and Replacement	17
13 kV Feeder Sectionalizing	18
Automated Emergency Ties	20
Overhead Feeder Reliability / VRS Replacement	21
Rear-Lot (Backyard) Pole Elimination	22
Frame Relay (Enhanced 4 kV Grid Monitoring)	29
4 kV UG Reliability	30
Overhead Secondary Reliability Program	32
Targeted Primary DBC Replacement	33
URD Cable Rejuvenation/Fault Indicator	34
Emergency Equipment Management System	36
ATS Installation USS Reliability XW	37
Reference Electric Operations - O&M - IIP-7	
Customer Response Program	39
Danger Tree Removal	40
Three Phase Gang Switch Inspection And Repair Program	42
Line Clearance Program	43
Overhead Planning Group	46
Double Wood Program	48
Rear Lot Pole Elimination	50

Electric Operations - 2009 Capital

Project/Program Title	Osmose (C Truss)
Status	Program Increase
Estimated Service Date	Ongoing

Work Description:
Accelerate the inspection, installation of C-trusses and pole replacements, from a 12-year cycle to a 10-year cycle in order to bring Con Edison in line with industry practices

Justification:
According to the U.S. Department of Agriculture Bulletin 1730B-121, *Pole Inspection & Maintenance,* Utilities in Decay Severity Zone 2 (New York Area) should perform pole inspections on a 10-year cycle in order to ensure the reliability of installed poles and safety to the public. A majority of the poles are inspected and treated as part of a maintenance program and are accordingly charged to O&M. Inspected poles that require attention are either replaced or restored to full strength and functionality by way of 'C-Trussing' which are installed as a support of the existing pole, deferring the need to replace it. Due to increasing loads on wood poles (due to larger conductor sizes and third party attachments) and to ensure public safety, it is necessary to either extend the life of the pole via C-trussing (at a reduced cost as compared to pole replacement) or to replace the pole, where necessary.

The program is being accelerated as we feel it has been under funded in the past, and the backlog of defective poles must be addressed. This acceleration will cost $146K more per year in capital expenses and $105 more per year in O&M expenses.

Estimated Completion Date:
Ongoing

Planning and Budgeting:

	# Of Poles	Cost For Inspect & Treat (I&T)	Reject Rate	(CAPITAL) C-Truss Cost X # Reject Poles
		$40	7.00%	$500
System Wide	210,000	$8,400,000	147,00	$7,350,000
10 yr cycle	21,000 / year	$840,000	1,470	$735,000

	Poles Replaced	Cost To Replace Poles	CAPITAL Cost For Pole Replace	O&M Cost For Pole Replacement
	1.10%	$6,300	71%	29%
System Wide	2310	$14,553,000	$10,332,630	$4,220,370
10 yr cycle	231	$1,455,300	$1,033,263	$422,037

	Total CAPITAL C-Truss and Replace cost	TOTAL O&M I&T and Replace Cost
System Wide	$17,682,630	$12,620,370
10 yr cycle	**$1,768,263**	**$1,262,037**

Electric Operations - 2009 Capital

Status:
Currently funded as a 12-yr cycle program.

Funding ($000)
Capital

Forecast 2009	Forecast 2010	Forecast 2011	Forecast 2012	Forecast Total
1,746	1,763	1,780	1,738	8,247

Electric Operations - 2009 Capital

Project/Program Title	Anderson Switches
Status	Ongoing
Estimated Service Date	2012

Work Description:
Overhead enhancement program to proactively replace all outdated 4kV Anderson type Oil Switches with new open air switches.

Justification:
These switches are used to reconfigure feeders to restore outages or to isolate portions or the primary circuit. The existing Anderson Switches on our overhead 4kV system need to be replaced for the following reasons:

- They are oil filled which is environmentally undesirable.
- It is difficult to identify the switch position (open or closed) either from the ground or in the air, which is a safety concern for our crews.
- There is no way to check the oil level in the switch, which presents a safety and reliability issue. We will not operate the switch while energized if we do not know the oil level (*Distribution engineering Bulletin 32*) because if the switch is operated with a low level or no oil it could catch fire. This means we must de-energize the switch before operating it.
- The replacement of the Anderson Switches to open air switches will allow quicker feeder modifications to restore outages, thereby improving reliability.

Estimated Completion Date:
2012

Planning and Budgeting:

Cost/Unit	Units/Year	Cost/Year
$7,200	14	$100,000

Status:
Ongoing

Funding ($000)

Request 2009	Request 2010	Request 2011	Request 2012	Request Total
$100	$100	$100	$100	$400

Electric Operations - 2009 Capital

Project/Program Title	Autoloop Reliability (27kV Inc'l)
Status	Ongoing
Estimated Service Date	June 2014

Work Description:
Perform the following work on the listed auto-loops in Brooklyn and Queens to address load growth.

Brooklyn – Loop Split

1. Dyker Loop is currently a system III loop with 22,249 kVA of load.

The work required to create a new auto loop:

- Extend 2 new 27 kV primary feeders by installing approximately 4150' of 2-5" concrete conduit, 10 M11-6 slotted manholes, and 44 sections of 3-500epr 27 kV cable.
- Install 2 feeder reclosers, 2 midpoint reclosers, 1 tie recloser, and 6 sensing transformers.
- Install 10 new 45' poles and 20 spans of 477 AL open wire cable.
- Transfer approximately half of the Dyker Loop load to new loop.

2. Midwood Loop is currently a system III loop with 12,014 kVA of load

The work required to create a new auto loop:

- Extend 2 new 27 kV primary feeders by installing approximately 3850' of 2-5" concrete conduit, 6 M11-6 slotted manholes, and 40 sections of 3-500epr 27 kV cable.
- Install 2 feeder reclosers, 2 midpoint reclosers, 1 tie recloser, and 6 sensing transformers.
- Install 13 new 45' poles and 25 spans of 477 AL open wire cable.
- Transfer approximately half of the Midwood Loop load to the new loop.

3. Marine Park Loop is currently a system III loop with 24,827 kVA of load

The work required to create a new auto loop:

- Extend 2 new 27 kV primary feeders by installing approximately 3975' of 2-5" concrete conduit, 5 M11-6 slotted manholes, and 35 sections of 3-500epr 27 kV cable.
- Install 2 feeder reclosers, 2 midpoint reclosers, 1 tie recloser, and 6 sensing transformers.
- Install 15 new 45' poles and 18 spans of 477 AL open wire cable
- Transfer approximately half of the Marine Park Loop load to the new loop.

4. Gravesend Loop is currently a system III loop with 21,400 kVA of load

The work required to create a new auto loop:

- Extend 2 new 27 kV primary feeders by installing approximately 4250' of 2-5" concrete conduit, 7 M11-6 slotted manholes, and 49 sections of 3-500epr 27 kV cable.
- Install 2 feeder reclosers, 2 midpoint reclosers, 1 tie recloser, and 6 sensing transformers.
- Install 16 new 45' poles and 23 spans of 477 AL open wire cable.
- Transfer approximately half of the Gravensend Loop load to the new loop.

5. Coney Island Loop is currently a system III loop with 16,629 kVA of load

The work required to create a new auto loop:

- Extend 2 new 27 kV primary feeders by installing approximately 4175' of 2-5" concrete conduit, 8 M11-6 slotted manholes, and 45 sections of 3-500epr 27 kV cable.
- Install 2 feeder reclosers, 2 midpoint reclosers, 1 tie recloser, and 6 sensing transformers.
- Install 16 new 45' poles and 30 spans of 477 AL open wire cable.
- Transfer approximately half of the Coney Island Loop load to the new loop.

Queens – Loop Split

1. Middle Village Loop is currently and system III loop with 21,255 kVA of load.

The work required to create a new auto loop:

- Extend 2 new 27 kV primary feeders by installing approximately 3780' of 2-5" concrete conduit, 11 M11-6 slotted manholes, and 39 sections of 3-500epr 27 kV cable.
- Install 2 feeder reclosers, 2 midpoint reclosers, 1 tie recloser, and 6 sensing transformers.
- Install 14 new 45' poles and 25 spans of 477 AL open wire cable,
- Transfer approximately half of the Middle Village Loop load to the new loop.

2. Laurel Hill Loop is currently and system III loop with 12,478 kVA of load.

The work required to create a new auto loop:

- Extend 2 new 27 kV primary feeders by installing approximately 4368' of 2-5" concrete conduit, 9 M11-6 slotted manholes, and 48 sections of 3-500epr 27 kV cable.
- Install 2 feeder reclosers, 2 midpoint reclosers, 1 tie recloser, and 6 sensing transformers.
- Install 13 new 45' poles and 27 spans of 477 AL open wire cable.
- Transfer approximately half of the Laurel Hill Loop load to the new loop.

The following 27 kV Auto-Loops will be enlarged from System II (3 reclosers) design to System III (5 reclosers) design.

Queens – Loop upgrade

1. Douglaston Loop is currently a system II loop with 6,549 kVA of load.
2. Whitestone Loop is currently a system II loop with 8,028 kVA of load.

The scope of this work will only require installing approximately 4 new midpoint reclosers and 4 sensing transformers.

Staten Island - URD Tie Points

Install Underground Radial Distribution (URD) primary cable and risers to provide tie points on 13 URD loops with 5 or more transformers.

Bronx/Westchester
Provide a third feeder on each side of a two feeder 13kv auto loop. There are currently 45 auto loops that require a 3rd feeder as back up either on one side or both sides. We have currently identified 12 locations in 7 auto loops where a 3rd feeder is available as a back up. These 7 autoloops are: the Washington St loop, Warburton loop, Southside loop, Woodlawn loop, Ludlow loop, Tarrytown loop, and King St loop.

Justification:

27kV Autoloops
According to spec *EO-2066 section 5, "Type of Systems"*, a type III auto-loop should be installed if the loads are between 6.0 MVA and 12.0 MVA. Also, a type II auto-loop should only be installed if loads are between 3.0 MVA and 6.0 MVA. The above-mentioned auto-loops have loads greater than the current specification allows and should be relieved with the establishment of new loops or upgraded loops.

Staten Island URD Tie Points
A review of URD installations in Staten Island has found 1 URD loop with 12 transformers fed radial (no tie transf.), 2 loops with 9 transformers (no tie), 2 loops with 8 transformers (no tie), 1 loop with 7 transformers (no tie), 1 loop with 6 transformers (no tie), and 6 loops with 5 transformers (no tie). When there is a fault involving primary cable or a transformer on any one of these spurs, it takes a very long time to restore power because there is no alternate feed. Overland primary jumpers are usually required. Typically, these are the longest duration outages on Staten Island. By adding tie points to those spurs with 5 or more transformers, we could greatly improve Staten Island CAIDI. It is estimated that each of these 13 locations will cost about $150,000 to correct. In 2007, Auto-loop reliability was addressed to 103 spans of overhead primary and aerial cables at a cost of $880,000.

Bronx / Westchester 3RD Feeders
The 3rd feeder will provide additional reliability whenever the main feeder supply is scheduled to be out of service for work or opens auto. This situation is applicable for most part of the year except during the summer period where a closer look at the loads is required. In cases where the 3rd feeder is equipped with an emergency VRS (vacuum recloser switch), the switch is remotely operated from the control center restoring customers within 5 minutes. Over the years, 16 autoloops have been converted from a 2 feeder supply to a 3 feeder supply to provide load relief, however these also increased the reliability of the autoloops. In the summer of 2006 we had two autoloops events in which the third feeder maintained the supply to the loops after each loop lost two of its three supplies. This evidence shows that by adding this 3rd feeder supply to some autoloops we will improve the reliability to these autoloops.

Estimated Completion Date:
June 2014

Planning and Budgeting:

- The cost to split the System III auto-loops will be approximately $4.1M x 7 loops = $28.7 million. To convert 2 of the auto-loops from a system II to a system III will be approximately $100K.
- The cost of each URD Primary riser will be about $150K x 13 risers = $1.95M.
- The cost to add a 3rd feeder per location will be approximately $80K with a 5% increase each year.

Electric Operations - 2009 Capital

Status:
This is a new, 7 year program.

Funding ($000)

Capital

Forecast 2009	Forecast 2010	Forecast 2011	Forecast 2012	Forecast Total
7,376	7359	7528	7450	29,713

Electric Operations - 2009 Capital

Project/Program Title	Aerial Cable Replacement
Status	Continuation of Existing Program
Estimated Service Date	2012

Work Description:
Continue the program to replace high failure rate aerial cable on the non-network distribution systems to increase overall system performance and reliability. Replacing existing cable such as Okonite with new primary cable will reduce the frequency of customer interruptions (SAIFI) due to aerial cable failures.

Justification:
Replacing aerial cable with high failure rates will improve system reliability. The aerial cable in this program supplies first contingency non-network loads including 13kV loops and 4kV unit substations. These feeders serve sensitive loads such as hospitals, nursing homes and corporate headquarters. Frequent failures of this cable place loops and unit substation customers in frequent contingency operation resulting in unacceptable customer interruptions. A review of our feeder performance over the last five years indicates that we experienced on average 18 failures per year on aerial cable. While the average number of failures remains relatively constant, since 2004, we have expended our aerial cable maintenance budget by an average of $950,000 per year as the replacement of sections of aerial cable for these failures has become more extensive. The outer jacket on older aerial cable has in many cases become porous over the years, causing the cable to absorb water. When a failure does occur, it is sometimes necessary to replace as much as 3,000 to 5,000 feet of cable in order to find dry cable to splice, thereby resulting in lengthy feeder outages. Proactive replacement of this troublesome cable with our standard Aerial Cable, (3-1c500 kcmil copper with EPR insulation, Con Edison specification 7558E), will increase reliability and decrease the frequency customer outages caused by aerial cable failures and the duration of feeder outages following a cable failure. Replacement priority will be determined by the failure history of the various sections of cable.

Estimated Completion Date:
On-going

Planning and Budgeting
Each year we plan to replace approximately 141 spans of aerial cable with new primary cable. The annual budget is estimated to be approximately $2.5M.

Status:
Continuation of Existing Program

Funding ($000)

Forecast 2009	Forecast 2010	Forecast 2011	Forecast 2012	Forecast Total
$2,521	$2,532	$2,544	$2,550	$10,147

Electric Operations - 2009 Capital

Project/Program Title	#4 and #6 Wire and Self-supporting Aerial Cable
Status	Ongoing
Estimated Service Date	Ongoing

Work Description:
Continue a #4 and #6 Copper Wire and Self-supporting Aerial Cable (SSC) Replacement Program on the 4 kV and 13kV Non-Network distribution systems to increase overall system performance and reliability. In many cases, the outer tree jacketed (protective) layers on the open wire and the insulation of SSC are aged and severely degraded. The program is to replace the existing deteriorated #4 and #6 copper open wire and SSC with new primary wires in order to reduce the frequency of customer interruptions (SAIFI). The #4 and #6 wire, which is located predominantly on spurs (radial branches of feeders), will be replaced with 1/0 or 4/0 Aluminum conductors as deemed appropriate. The SSC, which is usually located on the main run of the feeders, will generally be replaced with 477 kcmil Aluminum conductors. Aluminum conductors are the current industry standard used in overhead open wire construction. In all cases, the pole lines will be reconstructed to current specifications with new poles and new secondary wire, where needed. Replacement of the #4 and #6 wire and SSC will be prioritized based on customer outages on those feeders. The feeders with the worst performance and highest degradation of cable will be given a higher priority for replacement.

Justification:
In order to improve system performance it is important that a #4 and #6 wire and Self Supporting Aerial Cable replacement program be completed for the following reasons:

- Electric wires tend to sag when subjected to heavy load current conditions. Since the majority of this #4 and #6 wire has been in service for well over 40 years, much of this antiquated wire has been subjected to a great deal of these sagging effects. As a result, they are more vulnerable to breaking especially during winter weather conditions such as ice storms.
- Electric service to our customers is interrupted when these older open wire facilities, exposed to the environment without outer jackets, strike one another or make contact with tree branches during windy and adverse weather conditions. This situation can cause a fault on the open wire and can lead to component failure and / or the activation of protective equipment that de-energizes part a portion of the circuit.
- When working on SSC, by the nature of its design, that portion of the circuit must be de-energized thereby compromising reliability to any customers on the feeder.
- These outages which include both repairs and replacements are for the most part preventable through a proactive replacement program. By avoiding these outages in the first place, we wish to avoid the repair costs and tying up valuable resources during storms and other contingencies.
- With a proactive replacement program we would also reduce customer outage duration (CAIDI).

Estimated Completion Date:
2028

Planning and Budgeting:
Electric Distribution developed a twenty-year plan to replace the remaining 4.782 million feet of

deteriorated #4 and #6 Copper wires on our 4 kV and 13 kV overhead distribution systems. The current plan calls for the replacement of approximately 2,100 spans of cable a year. Due to the increase in conductor size/weight and the installation of open wire construction, it is estimated that 5% of the poles will also need to be changed. The cost for cable and pole replacement is estimated at $1510/ span. 2100spans x $1510/span= $3,171K/ year.

Status: Continuation of an ongoing, currently funded program

Funding ($000)

Forecast 2009	Forecast 2010	Forecast 2011	Forecast 2012	Forecast Total
$3,165	$3,169	$3,175	$3,175	$12,684

Electric Operations - 2009 Capital

Project/Program Title	ESCO Switch Replacement (Kyle®)
Status	Ongoing
Estimated Service Date	Ongoing

Work Description:
Proactive installation of Kyle® switches, the most current technology, to replace obsolete 4kV automatic ESCO® switches. This program will also include retro-fitting existing Kyle® switches with Supervisory Control and Data Acquisition (SCADA) equipment to remotely monitor and control these devices.

We plan to install 39 ESCO switches each year at an annual estimated cost of approximately $2.5M. This annual budget includes approximately $359K for labor, $1,746K for materials and supplies, $42K for contractor work and major equipment etc., $2K for other miscellaneous costs, and $360K in indirect costs.

Justification:
In order to improve the non-network system performance, it is imperative that this program is initiated, followed through and completed as scheduled for the following reasons:

- Reasons to install the electronically-controlled single-phase vacuum reclosers (the Kyle® Type NOVA):
  1. Greater operating range & higher interrupting capability – rated at 12,500 Amps as opposed to 800 Amps for ESCO® switches.
  2. Better coordination with substation breakers.
  3. They are equipped with automatic reclosing scheme as well as automatic sectionalizing – capable of reclosing after the faulted section is isolated.
  4. Customer interruptions could be improved by 84% and outage duration could be improved by restoring customers in as fast as 100 seconds.
  5. These switches are versatile and may be located on 4kV feeders of any length. Accordingly, we plan to install them on tied feeders that currently have no automatic midpoint device, thereby increasing reliability.
  6. They are equipped with remote operation and remote status and control capability for SCADA applications. This will help save customer restoration and inspection costs.
  7. They are not filled with oil which eliminates the environmental and safety concerns associated with overhead oil filled switches.
- Reasons to retire the current ESCO® switches:
  1. They have inadequate interrupting capability – rated at 800 Amps.
  2. They jeopardize system reliability by unnecessarily interrupting customers on the 4kV System. The ESCO® switch is blocked in the close position when its load current or fault current exceeds the interrupting capability; upstream protective devices such as station breakers at both unit substations would open during a line fault, which results in customers on the entire feeder being interrupted.
  3. Incapable of SCADA applications.
  4. They often fail mechanically (operating handles inoperative) under contingency situations.
  5. Environmental concerns - suffer oil leaks.
  6. Safety concerns - do not have oil level indicator. ESCO® switches have been discovered to have dangerously low level or no oil at times.

Estimated Completion Date:
Ongoing

Status:
Ongoing

Funding ($000)

Capital

Forecast 2009	Forecast 2010	Forecast 2011	Forecast 2012	Forecast Total
2,509	2,333	2,358	2,600	9,800

Electric Operations - 2009 Capital

Project/Program Title	33kV Interrupter Switches
Status	Planning
Estimated Service Date	December 2020

Work Description:
Install 42 switches on Staten Island 33kV feeders. 37 of these installations will require extensive work due to the SCADA setup. Each installation includes the following items:

- A primary riser on the first and third pole
- SCADA controlled new-type gang switch on the second pole
- Open wire between all poles
- Three new 50' poles

Below is a table listing all the projects:

	Project	Units	Scope
1	Install switches on 7 bifurcated 33kV feeders with SCADA switches	7	New Installation
2	Replace dead move switches on 33kV feeders with SCADA switches	19	New Installation
3	Replace disconnect manholes switches with SCADA switches	3	New Installation
4	Install new SCADA switches to facilitate Fresh Kills SS to Fox Hill SS transfer	8	New Installation
5	Replace switches to facilitate Fresh Kills SS to Fox Hill SS transfer with SCADA switches	5	Replace
	TOTAL	42	

The 19 dead move switches are being proposed for replacement with two new risers on adjacent poles on either side. Currently there is an up-feed and down-feed riser on the same pole as the single phase underarm switches. The single phase switches on the current pole are to be replaced by a new type gang switch. The new installation involves three poles instead of the current design which only has one pole. The first pole will be the up-feed riser, the second pole will have the new gang switch and the third pole will be the down-feed riser. We consider the new SCADA equipment to effectively be a new installation rather than a pure in-and-out replacement.

The 3 disconnect manhole switches proposed for replacement with SCADA switches are underground switches, therefore even though this is replacing a manhole switch, we effectively consider it to be a new installation.

Of the 13 SCADA switches proposed for the transfer of load between Fresh Kills substation and Fox Hills substation, 8 will be new installations and the other 5 will replace existing interrupter switches where the infrastructure is already constructed to specification.

Justification:

1) Install switches on 7 bifurcated 33kV feeders
The reliability of 7 bifurcated 33kV feeders is directly related to our ability to locate and isolate faults as they occur. The installation of 7 33kV SCADA switches on the existing bifurcated feeders will allow for the restoration of the un-faulted leg while fault locating and repairs are being made on the faulted leg. This will decrease feeder restoration times and increase system reliability.

2) Replace dead move switches on 33kV feeders

There are 19 dead move disconnect switches on the 33kV feeders in Staten Island. They were installed to sectionalize the feeders for either a fault condition or to allow work to proceed on a section of the feeder without interrupting service to the entire run of the feeder. This sectionalizing capability is critical to ensuring reliable service because of the first contingency (N-1) design on Staten Island. These switches give us the ability to limit any contingencies to a minimal area. The 33kV feeders on Staten Island feed the 4kV unit substation grids, therefore being able to keep portions of feeders alive while we perform work on other portions means that we can keep more unit substations on-line, feeding the grids. Because of the close proximity of equipment at these installations, the existing switches cannot be operated unless both sides are de-energized. This means the whole feeder first has to be processed and taken out of service to isolate the portion to be worked. This process unnecessarily exposes a larger area to contingency operation for several hours. The process has to be repeated in reverse in order to restore the portion of the feeder that was worked which means that the entire feeder is once again de-energized. The proposed SCADA switches can be operated remotely, can be operated in real-time (to drop or pick up load), and provide real-time loading and voltage information. Therefore, SCADA switches eliminate a considerable amount of switching and exposure to contingency operation.

Replace disconnect manhole switches with SCADA switches

There are 3 disconnect manhole switches on 33kV feeders in Staten Island. They present the same operating limitations and would yield the same benefits from the installation of SCADA switches as the dead move switches.

Fresh Kills SS to Fox Hill SS transfer

There are 5 tie switches on the 33kV feeders in Staten Island that link feeders out of Fresh Kills substation to 5 feeders out of Fox Hill substation. Therefore, a total of 10 feeders are involved with this transfer. The ability to shift load between the two stations will allow station load relief projects to be deferred or eliminated. The speed at which that transfer can be accomplished is critical. Presently, 2 of the tie switches have been upgraded to SCADA while all other switches have to be manually operated. Manually operation cannot be accomplished in less than one hour, therefore during the load transfer we cannot stay below the 1-hour rating on the transformers. Thus, without these switch upgrades, we cannot perform this load transfer. To optimally leverage the contingency capacity of the transformers in both stations, we will need to have SCADA switches at all 5 tie points and SCADA switches along each of the 10 feeders. This is so the particular load pockets involved in a transfer can be switched over rather than switching the entire load from one station to another. This upgrade includes 8 switches that are effectively new installations and 5 switches that will each simply require the replacement of an interrupter switch.

Completion Date:

December 2020

Electric Operations - 2009 Capital

Planning and Budgeting:

	Project	#	$ each	$ total
1	Install switches on 7 bifurcated 33kV feeders (2009-2010)	7	$110K	$770K
2	Replace dead move switches on 33kV feeders(2011-2016)	19	$110K	$2,090K
3	Replace disconnect manholes with SCADA switches(2016)	3	$110K	$330K
4	new switches-Fresh Kills SS to Fox Hill SS transfer (2017-2019)	8	$110K	$880K
5	Replace switches-Fresh Kills SS to Fox Hill SS transfer (2019-2020)	5	$20K	$100K
	TOTAL	42		$4,170K

Status:
Planning

Funding ($000)

Capital

Forecast 2009	Forecast 2010	Forecast 2011	Forecast 2012	Forecast Total
435	335	320	320	1,410

Electric Operations - 2009 Capital

Project/Program Title	Three Phase Gang Operated Switch Inspection and Replacement
Status	New
Estimated Service Date	Ongoing

Work Description:
Inspect and replace defective Gang Operated Switches on the 13kV auto-loops, 27kV auto-loops and the 4kV overhead systems. Replace the defective gangs with the new S&C Hot-stick Operated Gang (HOG) switch. The new HOG switches are more compact, are operated via hot-stick and will not have the alignment problems the current gang switches have. The inspection program will be prioritized based on the greatest customer impact.

Justification:
It is estimated that as many as 20% of the gang switches presently on the overhead system, especially on loops that were built over 20 years ago, have some type of operating mechanical problem such as misalignment of the switch blades. This is due to warping of the cross arms, warping of the switch hardware, or shifting of the pole. Mechanical problems can cause the gang switch to fail to open or close, which lengthen isolation times creating longer customer outages. There are a total of 1050 gang switches throughout the system. An estimated 10% have been replaced in the past ten years, and 90% (945) of the remainder are 20-30+ years old.

Estimated Completion Date:
10 year on-going cycle of inspection and repair.

Planning and Budgeting:
Replace approximately 190 gang switches, which represent 20% of the 945 switches on the system.
Approximately 19 gang switches to be replaced per year for 10 years.
Total cost associated with the replacement is $21K per switch location x 19 locations per year = approx. $400K/year

Status:
New

Funding ($000)

Forecast 2009	Forecast 2010	Forecast 2011	Forecast 2012	Forecast Total
400	400	400	408	1,608

Historical Year (2007)	Forecast RYE 2010	Forecast RYE 2011	Forecast RY E 2012	Forecast Total
78	349	349	349	1,047

Electric Operations - 2009 Capital

Project/Program Title	Additional 13kV Feeder Sectionalizing
Status	Ongoing
Estimated Service Date	2013

Work Description:
Install the following equipment to provide further sectionalizing on 17 different 13kV overhead auto-loops:
- 20 gang operating switches,
- 18 single phase air break switches,
- 2 Midpoint Vacuum Recloser Switches (VRS),
- 1 Scada-mate® switch,
- 1 set of 3 phase Kyle® Reclosers, and
- 1 SF_6 Vista® switch

Justification:
- The installation of gang operating switches, single-phase air break switches, midpoint VRSs, and a Scada-mate® switch will facilitate the isolation of faults and will further sectionalize the feeders to limit the number of customer outages during contingencies.
- The Kyle® Reclosers will help to isolate faults on large spurs where fusing capability is limited.
- The 600A 15kV underground SF_6 Vista® switches with interrupter capability can provide isolation of feeder faults and introduce alternate supply to the auto-loops.

The combination of all these devices will improve system operation and reduce the frequency and extent of customer outages during contingencies.

Estimated Completion Date:
2013

Planning and Budgeting:

Equipment	Quantity	Cost/unit	Total
Gang Operated Switches	20	$3K	$60K
Single Phase Air Switches	18	$1K	$18K
VRS (Midpoint reclosers)	2	$65K	$130K
Scada-mate® Switch	1	$3K	$3K
Kyle® Recloser	1	$45K	$45K
SF_6 Vista Switch	1	$90K	$90K

The plan will follow the schedule below:

			2008		2009		2010		2011		2012		2013	
EQUIPMENT	**Total req**	**Cost per**	Units	Cost	Units	Cost	Units	Cost	Units	Cost	Units	Cost	Units	Cost
Gang Operated Switches	20	$3K			1	$3k	5	$15k	6	$18k	6	$18k	2	$6k
Single Phase Air Switches	18	$1K					6	$6k	6	$6k	6	$6k		
VRS (Midpoint reclosers)	2	$65K	1	$65k									1	$65k
Scada-mate® Switch	1	$3K			1	$3k								
Kyle® Recloser	1	$45K	1	$45k										
SF_6 Vista Switch	1	$90K			1	$90k								
			2	**$110k**	**3**	**$96k**	**11**	**$21k**	**12**	**$24k**	**12**	**$24k**	**3**	**$71k**

Status:
Continuation of a currently funded program. Total project length of 6 years.

Funding ($000)

Capital

Forecast 2009	Forecast 2010	Forecast 2011	Forecast 2012	Forecast Total
97	21	24	24	166

Electric Operations - 2009 Capital

Project/Program Title	Automated Emergency Ties
Status	Ongoing
Estimated Service Date	2013

Work Description:
This project will convert 50 manually controlled emergency feeder tie switches on 13 kV auto-loops to electronically controlled, automatic circuit reclosers equipped with wireless communication, remote monitoring and control capability.

Justification:
Operations personnel will be able to monitor and control these reclosers and SCADA switches from the operations center, responding more rapidly to distribution feeder events. System reliability will improve due to more timely information that allows faster response to system disruptions and control of switches eliminates dispatching crews to operate this equipment. Also, engineering personnel can access load data from the line reclosers for system planning.

Estimated Completion Date:
2013

Planning and Budgeting:
$75,000 per switch for equipment and installation
Install 10 switches per year.

Status:
Ongoing

Funding ($000)

Capital

Forecast 2009	Forecast 2010	Forecast 2011	Forecast 2012	Forecast Total
750	750	750	750	3,000

Electric Operations - 2009 Capital

Project/Program Title	Overhead feeder reliability/VRS Replacement
Status	Ongoing
Estimated Service Date	2012

Work Description:
Replace all 56 Vacuum Recloser Switch (VRS) upper units on a 5 year program. The replacement prioritization of these units is as follows; all will be replaced with the current standard 20kA type recloser switch:

1) All of the 20 12kA units that are estimated to be between 20 and 30 years old.
2) The 16kA units that are estimated to be over 20 years old.
3) The remaining 16kA units that are less than 20 years old.

Justification:
Vacuum Recloser Switches are essential for the automatic operation of the 13kV and 4kV auto-loops. All units over 20 years old are required to be evaluated for replacement as mandated by engineering specification *EO-10320.Maintenance of three phase overhead vacuum reclosers (4kV, 13kV, & 27kV bulletin -52 active).* Many of these switches are actually rusting in place and are well past the manufacturers duty cycle limits. Additionally, they are limiting pieces of equipment as they cannot properly marry with the most up to date control box in use. Consequently, we plan replace all 12kA units that are over 20 years old with standard 20kA units regardless if the fault current is less than 12kA or 16kA as is our standard across the system.

Estimated Completion Date:
2013

Planning and Budgeting:
Cost per unit with lower control box and remote monitoring capability: $75,000.

The 5 year plan:
2008 - $450K (currently funded)
2009 - $750K
2010 - $750K
2011 - $1,125K
2112 - $1,125K

Status:
Continuation of a currently funded program.

Funding ($000)

Capital

Forecast 2009	Forecast 2010	Forecast 2011	Forecast 2012	Forecast Total
750	750	1,125	1,125	3,750

Project/Program Title	Rear-lot (Backyard) Pole Elimination
Status	New Program
Estimated Service Date	2143

Work Description:
Eliminate backyard electric distribution that provides service to 8,750 customers, and relocate this service to a location that provides easier access. To relocate the services a new point of entry will have to be made at each location to accept the service from the front of the dwelling. Following the design of three projects, we estimate the costs to be approximately $22,000 per service converted. The main driver of this unit cost is the extensive amount of underground infrastructure installation required. These locations are in network areas with existing underground facilities, therefore we are required to install underground services. Estimates indicate that the program will require the installation of 95,000 feet of conduit, 6,700 structures, 21,000 feet of service conduit, 1,200 sections of secondary mains, and 8,600 underground service cables.

Justification:
Access to the 2,800 poles currently installed in the rear of residential dwellings has become problematic. Customers have developed their properties and installed structures, decks, awnings, overhangs, etc. that prevent Con Edison crews from gaining access to these facilities in order to complete essential work. Additionally, the expansion of some of the dwellings has brought the structures to within inches of the minimum safe distance of the power lines. The difficulty in gaining access to the backyards have, in a number of cases, prolonged customer outages, caused lengthy negotiations between the owner and the company regarding access, and prevented routine maintenance to these facilities. In many of these locations, crews have to carry ladders, tools, cable, equipment and poles through customers' houses. On some occasions, during emergencies, police crews had to be dispatched to mediate between neighbors and crews. Due to the age of the pole lines, many of these poles and cables are in need of replacement and customers have experienced frequent outages. The relocation of the pole line from the rear-lot to the front will help to minimize outages, allow for routine maintenance, and eliminate the company's dependency on customer cooperation/presence to perform maintenance and emergency operations.

Three examples are used to depict the problems that are being encountered. The examples below refer to pages in appendix A.

Example 1: Appendix A pages 1-3: Proximity to buildings and structures.
Page 1 shows the actual undermining and I-beam temp support of a backyard pole placed by contractors during construction. While we do not have actual pictures of the backyard lines, you can see from Page 2 that the rear property lines are running within inches of the minimum allowable clearance from the large apartment building. This is a problem as it poses a risk to public safety. Page 3 is the M&S plate of the area.

Example 2: Appendix A pages 4 & 5: Lack of proper access.
The areas in the aerial photos (page 4), that are circled in yellow, have backyard pole lines. Page 5 is the M&S plate of this area. As shown in the photo on page 4, there is NO access into the "Courtyard" except through a customer's home. When a pole in this situation requires replacement, the pole would be carried through a customer's home (i.e. through their living room, kitchen, and into the backyard).

In addition, the courtyard is not completely open. If a repair to a span is required, access through two or more homes is required (each pole location and where the problem with the wire has occurred). We are dependent on customers granting us access THROUGH their house, possibly in the middle of the night, to repair something that is not even affecting them. During storms or contingencies, this lack of access may result in dangerous situations remaining unaddressed until a customer grants the crew access to the affected area. This poses a risk to public safety, as well as a delay to restoration.

Example 3: Appendix A page 6: Lack of Access.

The rear-lot overhead is fed from both ends of the block via underground secondary and risers. As shown on page 6, underground feeds to the backyard overhead becomes inaccessible when a property owner expands his building and covers up the manholes. If a secondary burnout occurs in this area, there could be no access to the manholes if the customer denies the Company access by not allowing us to break up his restaurant floor to get at the manholes. As a result, the feed would have to be cut at the street and at the riser pole in order to isolate the burnout, possibly resulting in low voltage due to insufficient support for the block.

Estimated Completion Date:

2143

Planning and Budgeting:

Services	Cost/Service	Total Cost	Program Years	Cost/Year
8,750	$ 22,000	$ 192 M	135	$ 1.437 M

Due to the nature of the work, there is O&M involved in this project. It estimated that it is about 100% of the capital cost. Costs will be incurred to rearrange the way the customer is serviced inside customer property.

Status:

New Program

Funding($000)

Capital

Forecast 2009	Forecast 2010	Forecast 2011	Forecast 2012	Forecast Total
1,437	1,437	1,437	1,437	5,748

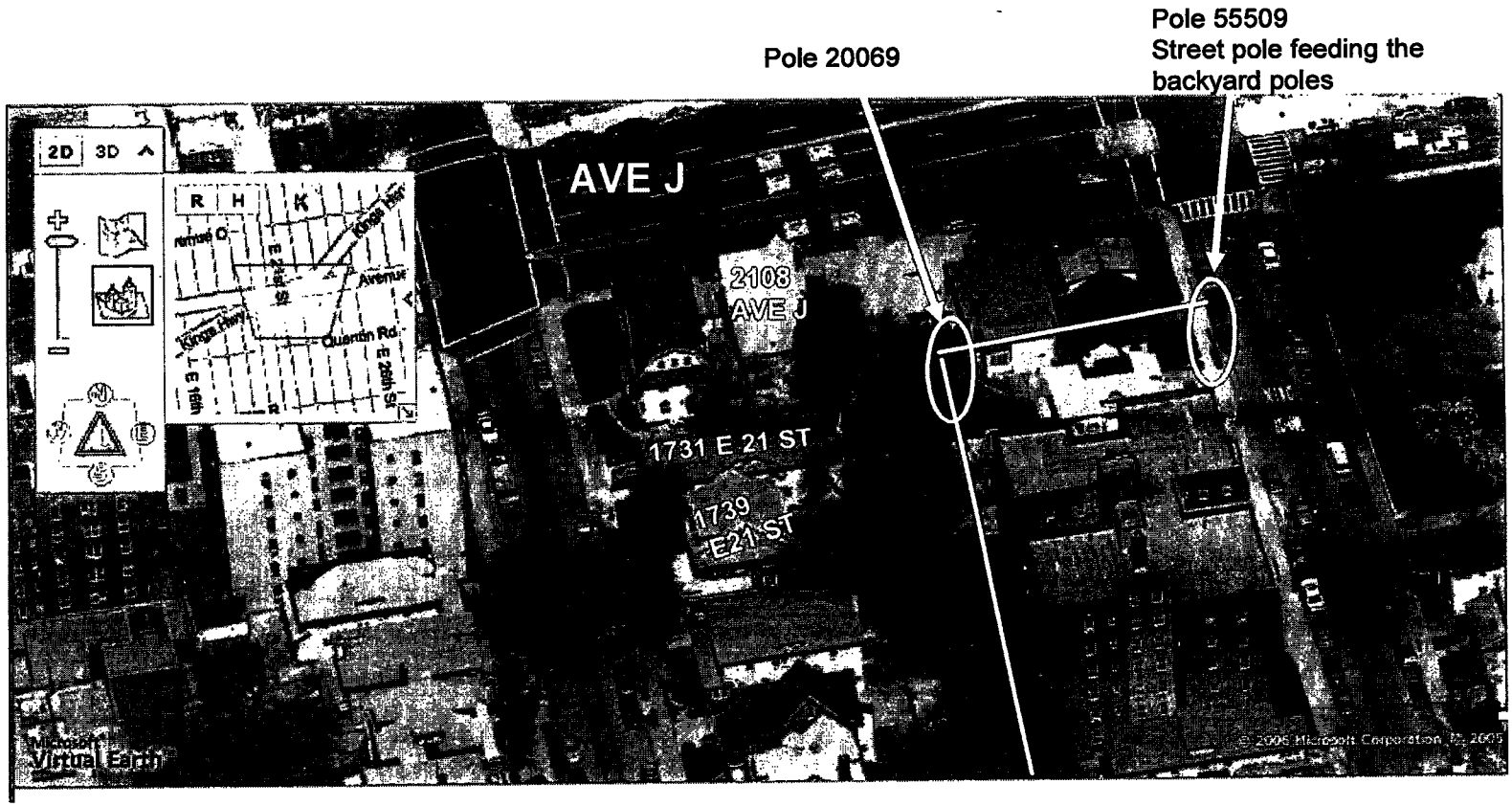
O&M

Forecast 2010	Forecast 2011	Forecast 2012	Forecast Total
1,437	1,437	1,437	4,311

Appendix A:

Backyard pole is being braced with I-beam. Pole is undermined and in bad condition.

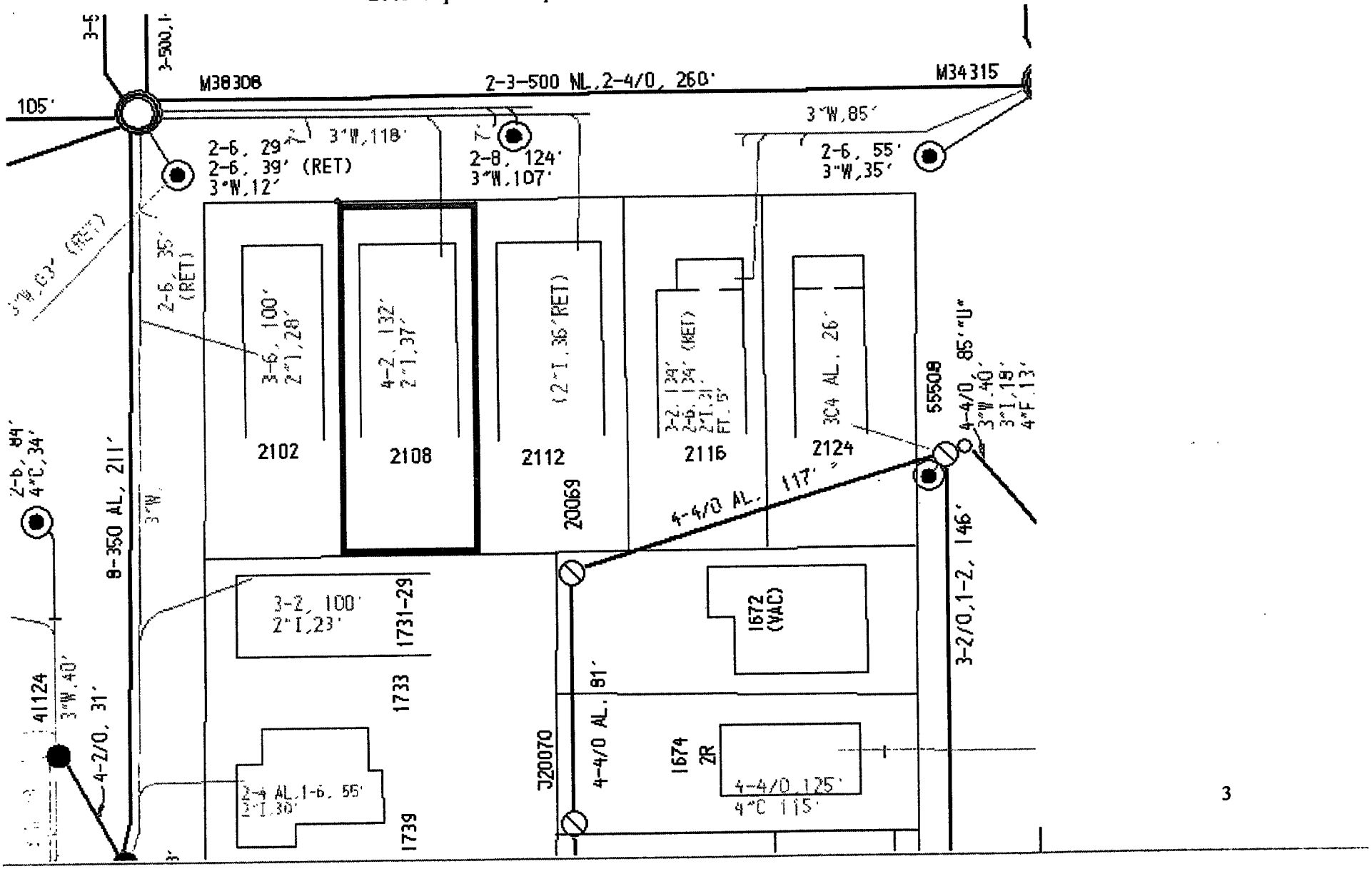
1



Drawn in Yellow, the backyard OH lines run within inches of the minimum allowable clearance from the apartment building

2

2009 Capital and Operations & Maintenance (O&M)



3

The backyards are enclosed courtyards. As shown above, the houses are ATTACHED row houses. There is NO access to the courtyard except THROUGH a house. When these poles require replacement, crews need to bring a pole through a customer's living room to get to the backyard.

4

Electric Operations - 2009 Capital

Project/Program Title	Frame Relay (Enhanced 4 kV Grid Monitoring)
Status	Research & Development
Estimated Service Date	2012

Work Description:
Install and test a new Power Quality intelligent metering and control device and a new battery monitoring system at each 4kV Unit Substation.

Justification:
The installation of a more highly technical power quality and battery monitoring system at the 4kV Unit Substations eliminates the need to manually test and inspect the station batteries, and at the same time provide enhanced and continuous monitoring and alarm. This will result in an improved method to monitor, respond, and repair batteries in Unit Substations as needed. Applying this technology will result in improved system reliability and result in cost savings of approximately $450,000 annually.

With the installation of a Power Quality intelligent metering and control device, the power flow and harmonics at the 4kV Unit Substation will be continuously monitored and analyzed. Harmonics, if not controlled, can result in loss of life in transformers, overheating cables, and cause unexplained breaker operations. Uncontrolled elevated harmonics can contribute to the unnecessary replacement of 4kV Unit Substation transformers. The replacement of a single transformer can cost up to $600,000 and if harmonics mitigation can prevent the replacement of just one transformer in five years, the cost savings of $120,000 per year can be realized.

Estimated Completion Date:
2012

Status:

Funding ($000)

Forecast 2009	Forecast 2010	Forecast 2011	Forecast 2012	Forecast Total 2009 - 2012
2,500	3,500	2,500	2,500	11,000

Project/Program Title	4 kV Underground Reliability
Status	Ongoing
Estimated Service Date	2020

Work Description:
Approximately 33,000 overhead customers experience a sustained outage each year due to the associated failure of underground cables, joints, and terminations. These customers can be better served by preemptively replacing the targeted poor performing 4kV underground cable. This type of underground cable failure occurs on either the sections from the station breaker to the first primary riser or on dips. (A dip is an underground portion of a feeder between two overhead portions of the feeder.)

Figure 1 represents a 4kV Network, which is comprised of six 13, 27, or 33kV feeders (designated F1 - F6) supplying six Unit Substations (designated USS1 – USS6). Each of the unit substations has between two and six outgoing 4kV feeders on the secondary side of the bus (designated F7 – F12.)

The beginning portion of the 4kV feeders is underground and has very few customers. When this underground portion fails, the customers on the overhead portion of the feeder receive a sustained outage until field switching can be performed. A failure in a dip has a similar effect on the remaining overhead customers.

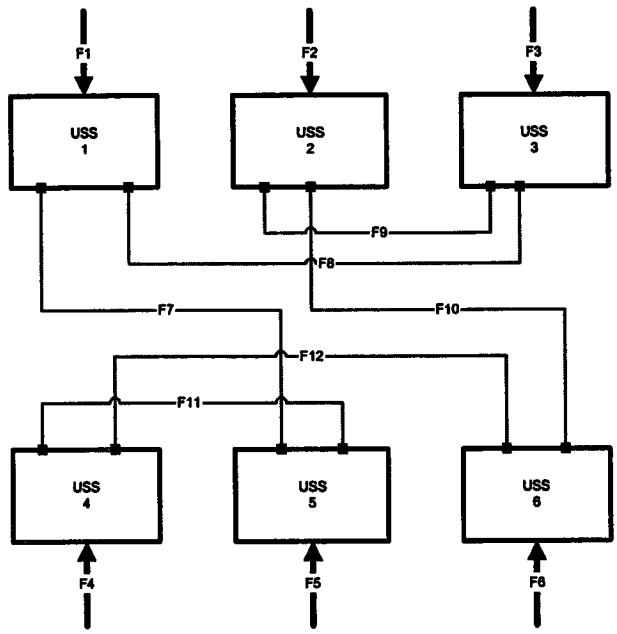


Figure 1

Justification:
This program will reduce the frequency of customer interruptions due to underground cable failures on 4kV systems.

A major driver in these outages is the failure of 3-350 underground rubber 4kV cable (spec. # 427/450). The 3-350 rubber 4kV cable was originally installed on the 4kV system between 1950 and 1970 and over the years the integrity of the rubber insulation has deteriorated leading to frequent failures. Presently, there are approximately 2,200 sections of targeted rubber cable on the system which we will need to replace. The cable will be upgraded with Ethylene Propylene Rubber (EPR) cable which is made with a much higher quality rubber insulation

In addition, other feeders that have failed frequently due to underground faults will be targeted for cable replacement. For these feeders we will replace cable from the station breaker to the first riser or from riser to riser creating a solid underground run of cable which will be a more reliable installation.

Electric Operations - 2009 Capital

This program will also include approximately 5,000 trench feet of associated conduit each year.

Estimated Completion Date:
2080

Planning and Budgeting:
Annual replacement plan:

	Units	Cost / unit	Total Cost	Years of program	Cost / Year
Rubber Cable	2,200	$ 18,100	$ 39,820,000	80	$ 570k
Poor Performing Feeder Cable	900	$ 18,100	$ 16,290,000	80	$ 233k
Conduit	60,000	$ 230	$ 13,800,000	80	$ 197k
			TOTAL/YEAR		$ 1,000,000

Each year of the program we plan to replace approximately 30 sections of primary cable. The annual budget is estimated to be approximately $1.0M.

Status:
Ongoing

Funding ($000)

Forecast 2009	Forecast 2010	Forecast 2011	Forecast 2012	Forecast Total
1,111	1,111	1,111	1,111	4,444

Electric Operations - 2009 Capital

Project/Program Title	Overhead Secondary Reliability Program
Status	New Program
Estimated Service Date	2018

Work Description:
Replace overhead secondary wires that are aged, un-insulated, and undersized to improve service reliability and reduce customer complaints. Replace aged open wire services which have poor insulation qualities and insufficient connections with new triple services equipped with crimp connections.

Justification:
Defective and undersized overhead secondary wires are the primary cause of complaints regarding low voltage and flickering lights. Also, much of this wire is bare and has excess slack which can cause the wires to "slap together" in windy conditions. Replacement of this wire will reduce the frequency of customer outages (SAIFI) as well as improve customer satisfaction by improving the quality of power delivered to our customers. Approximately 2,500 spans (500,000 feet) of secondary wire will be replaced under this program with 4/0 Aluminum cable. We will utilize reliability indices based on storms, customer complaints, low voltage and other records to identify and prioritize targeted cable for replacement.
The new triplex service wire is a more robust and resilient service capable of withstanding greater tree and element exposure. This will enhance our storm hardening strategy of risk prevention and mitigation. Public safety is improved since a failure of one phase of triplex generally does not drop the conductor to the ground as it would with open wire, thereby reducing public exposure to live wires.

Estimated Completion Date:
We plan to complete this ten year program in 2018.

Planning and Budgeting:
Each year of the program, we plan to replace 588 spans of overhead secondary wires which include both wires and wire services at an estimated cost of $500K each year. The annual budget includes $180K for labor, $60K for materials and services, $90K for contractor work and major equipment etc., and $170 in indirect costs.

Status:

This is a new proactive replacement program. In the past, wires were only replaced as needed.

Funding ($000)

Forecast 2009	Forecast 2010	Forecast 2011	Forecast 2012	Forecast Total
500	500	500	500	2,000

Electric Operations - 2009 Capital

Project/Program Title	Targeted Primary DBC Replacement
Status	On Going
Estimated Service Date	2038

Work Description:
Targeted primary and secondary Direct Buried Cable (DBC) cables are to be replaced with cable-in-conduit (CIC) to improve reliability of Underground Residential Distribution (URD) customers and to reduce burnout expenditures incurred to repair DBC cables. Candidate cables for replacement usually experienced two or more failures at different spots along the cable section where often the insulation is found to be cracked or split. These candidate cables for replacement will be prioritized appropriately to address the highest urgency replacements.

Justification:
During the past 3 years, approximately 60% of all URD customer interruptions were due to insulation breakdown of DBC primary and secondary cables. These interruptions result in increase in SAIFI by an avg. of 22 outages/yr. and 46 outages/yr. for Westchester and Staten Island, respectively. On average, it takes 20% longer to locate and repair a fault when it occurs on DBC than it does to repair a fault that occurs on the same cable resting in a conduit. From 2002 to 2007, an average of 1,250 URD customers each year in Westchester and Staten Island (98% of all URD customers) experienced a service interruption due to problems with DBC. Targeted installation of URD cable-in-conduit for both primary/secondary sections and services will reduce the amount of DBC on the system thereby reducing URD customer outage frequency (SAIFI) by approximately 60% and reducing annual repair expenses.

Estimated Completion Date:
This program began in 2008, and will be complete in 2038.

Planning and Budgeting:

Costs associated with a 30-year replacement program are:

Component	Total units	Units/Year	Material Cost/Yr
Primary & Secondary Sections	1,800	60	$270,000
Services	12,000	133	$130,000
		TOTAL MATERIAL/YEAR	$400,000
		TOTAL LABOR/YEAR	$410,000
		TOTAL COST/YEAR	$810,000

Funding ($000)

Forecast 2009	Forecast 2010	Forecast 2011	Forecast 2012	Forecast Total
$800	$800	$800	$800	$3,200

Electric Operations - 2009 Capital

Project/Program Title	URD Cable Rejuvenation Rehabilitation and Fault Indicator Program
Status	Ongoing
Estimated Service Date	

Work Description:
Cable rejuvenation is a rehabilitative process of restoring deteriorated solid dielectric cable to like-new dielectric strength by removing contaminants and moisture and in-filing voids with insulation. The scope of this work involves the following tasks:

- Test and evaluate the integrity of field aged URD direct buried cable
- Using proprietary testing procedures test and evaluate the integrity of selected URD cables and prioritize its proximity to failure.
- Following a positive GO/NO GO decision, remove from service and inject selected URD primary cables with restorative fluid
- Continually identity candidates for programmed replacement
- Identify those URD and pad mount transformers that do not have automatic reset FCI (faulted circuit indicator); estimated to be approx. 900 units in B-W of 5300 Units based on maintenance program data.

Justification:

- Establish a program for planned evaluation of all URD cable systems
- Elimination of "run to failure" operation of URD systems
- Provide a decision algorithm for prioritization of URD cable maintenance, rehabilitating vs. replacement URD primary cables
- Improve SAIFI of non-network radial feeders by avoiding emergency interruptions.
- Extend present life of URD cable at a 65% cost savings ($10-12 vs. $32-40)
- Fault Indicators reduce the time to identify faulted sections, and facilitates switching to expedite repairs. Leads to CAIDI reduction on non-network URD primary cable feeders. Program will begin 2009.

Estimated Completion Date: 2012 year end

Status: Current funding is R&D only for Cable rejuvenation.

Total Funding Rejuvenation($1.524M))

- Evaluation of the URD cable population 1000hrs @$90 $90,000
- Specify locations for application 1000hrs @$90 $90,000
- Assemble contractor documents, purchase contracted services,
  - Administer contract in the filed 600hrs@$90 $54,000
  - Contractor costs to perform required work
    100,000 cable feet @ $10-12/ft $1,200,000
- Evaluate the annual progress and, if required, restate the goals for next annual program
  1000hrs @$90 $90,000

Estimated total cost for 4 year program of 100,000 feet to URD cable treatment. 100,000 feet represents about 10% (rounded) of the total population of the system-wide URD Installation (See Table 1) and the amount the Company projects can be reasonably achieved, on average, on an annual basis. Also considered is the sliding age progression curve of the total population.

Electric Operations - 2009 Capital

Table 1.

Primary Cable URD -- Source: Property Records (DFIS) 2007						
Cable - 4kV - U.R.D.	Systemwide	Bronx	Staten	Bklyn	Queens	Westc
Cable Feet	440,841	2,397	148,841	6,348	10,273	272,982
Average Age	35	30	34	35	36	35
Cable - 13kV - U.R.D.	Systemwide	Bronx	Staten	Bklyn	Queens	Westc
Cable Feet	578,398		372,096			206,302
Average Age	34		34			35
total 4kv and 13kv primary URD cable	1,019,274					

Total Funding Fault Indicator ($595K)

- Labor ($509K): ID and prioritization of transformers ($72K). Installation ($396K). Reporting ($41K)
- Materials ($ 86K)" 900@$95/unit

Funding ($000)

Forecast 2009	Forecast 2010	Forecast 2011	Forecast 2012	Forecast Total
$806	$806	$198	$198	$2,008

Electric Operations - 2009 Capital

Project/Program Title	Enhanced Customer Communication Storm Outage Mgmt System
Status	
Estimated Service Date	2012

Work Description:
Retire the Emergency Control System (ECS) and develop software to replace its key components that are still required to process work in Electric, Gas and Steam Operations.

Retire the Outage Manager and replace it with Obvient's Focal Point solution to provide improved restoration planning and outage reporting

Continue to enhance the capabilities of the System Trouble Analysis and Response System (STAR) and integrate:

- Distributed Switching Model
- Improved facilities to calculate restoration times
- Enhanced mobile dispatch functions
- Interfaces to Interactive Voice Response Units
- Oracle software upgrades and new releases

Continue to enhance www.coned.com and provide improved outage communications and facilities for customers and municipal official to report storm damage.

Justification:
The retirement of ECS will facilitate the consolidation of outage management systems and make STAR the primary tool for managing the outage restoration process. In addition, complex interfaces used to maintain data synchronization between STAR, ECS and Outage Manager will be eliminated. The retirement of ECS will also require the integration of enhanced capabilities within STAR including:

- Distributed Switching Model
- Improved facilities to calculate restoration times
- Enhanced mobile dispatch functions
- Integration of telemetry and SCADA data
- Interfaces to Interactive Voice Response Units
- Oracle software upgrades and new releases

Similarly, Obvient Focal Point will establish a reporting environment that goes directly against STAR and will improve restoration planning activities and provide a dashboard-like summary of outage statistics.

Improvements to www.coned.com will provide customers, municipal and government officials with up to date information outage event information and will also allow them to provide Con Edison with information about outages in their areas.

Estimated Completion Date:
2012

Funding ($000)

Forecast 2009	Forecast 2010	Forecast 2011	Forecast 2012	Forecast Total 2009 - 2012
3,000	1,500	1,000	500	6,000

Electric Operations - 2009 Capital

Project/Program Title	ATS Installation / USS Reliability
Status	New Program
Estimated Service Date	2018

Work Description:
This program will install new Automatic Transfer Switches (ATS) switches at 53 unit substations at an estimate cost of $450K per location.

The table below lists the unit substations in the program and the priorities for each 4kv grid:

1-Zerega Ave	2-Middletown Rd	3-Screvin #1	4-Screvin #2	5-Sampson #1
6-Sampson #2	7-Sommer #1	8-Sommer #2	1-Chester Heights	2-Valley-Pl
3-Quaker Ridge	4-Beechwood	5-Osman Pl	5-Palmer #1	6-Gun Hill
7-E.226St	8-Forest	9-Webster	10-Flint Park	11-Bonnie Briar
12- Eastchester Creek	1-Woodlawn	2-Yonkers	3-Whrexham	4-Dunwoodie
5-Grassy Sprain	1-Mt Hope	2-Crestwood	3-Fort Hill	4-Canfield
5-Helena	1-Rockne	2-Nepperhan	3-Rose Hill	1-Fenimore
2-Kenilworth	3-Gedney	4-Haviland	5-Underhill	6-Scarsdale
7-Saxon Woods	8-Heathcote	9-Green Knolls	10-Vernon Hills	11-Primrose
1-Milton Point	2-Manursing	3-Bowman	1-Van Wart	2-Manhattan Pk
1-Maryknoll	2- Brookville	1-Furnace Dock		

Justification:
Automatic transfer switches (ATS) automatically switch a unit substation to an alternate 13kV supply when the primary supply is lost. ATSs are a 'smart' automation element in our 4kV grid that enables our system to automatically reconfigure itself upon the loss of a primary component, ensuring a first contingency design. Because the ATS is such an essential part to our 4kV grid, ensuring they are installed at every substation is of high importance. Currently, we have 32 ATS installed at our 112 Unit Substations. This program will address the required 53 that do not yet have this functionality.

In almost all cases, during the summer period, the outage of a unit station (loss of primary supply), prompts the company to immediately dispatch a 2MW generator. The generator move is a proactive step to relieve the 4kv feeder overloads from the associated unit stations in anticipation of a next feeder or station outage. In addition, the analysis group would provide overhead switching moves to inter-tie feeders to improve customer voltage. The dispatching of a generator is a time consuming step especially when the outage event occurs during high load periods and the risk is high for cascading outages. The average time to find a suitable location for the generator, transportation, and connections is 6 hours. Additionally these generators are undesirable as we get many complaints from customers and officials who are exposed to generator noise and/or traffic inconveniences.

Our installations will be prioritized by the potential impact each substation will have on the service to customers if it loses supply. We will reduce customer outage frequency and duration by installing the ATS functionality at these additional unit substations.

Any customer outage event resulting from a loss of primary supply to a unit station would be greatly reduced by the application of an alternate supply that is provided by an ATS. The duration of the outage is also reduced by the average time to setup a generator (6hrs). Each year there are least 1-2 outage events on any 4kv grid due to the lack of ATS, causing from few hundred to several thousands of customers to be without power.

Estimated Completion Date:
10 years to be completed by 2018. We plan to install 5-6 ATS units each year at a cost of $450K/unit.

Status:
New Program

In the past we have installed ATS at unit substations as a reactionary move to remedy the repeated outages caused by the failure of multiple primary supply feeders including the high 4kv feeder loads. We do not have a specific program on ATS installations to improve the reliability of the 4kv grid, and thus this program has been initiated.

Funding ($000)

Capital

Forecast 2009	Forecast 2010	Forecast 2011	Forecast 2012	Forecast Total
2,450	2,450	2,450	2450	9,800

2009 Operations & Maintenance (O&M)

Project/Program Title	Customer Response Program
Status	
Estimated Service Date	January 2009

Work Description:
Energy Services in support of the Company's sensitivity and heightened response to System Emergency efforts during heat events, winter storms, overhead storms and other system emergencies will support Electric Operations elevated efforts during overhead storm and heat wave conditions associated with assessment of impact areas, equipment and/or customers through the use of the Customer Assessment Team (CAT) initiative. In support of CAT, Energy Services will assign resources to the field activities of Customer Count Team (CCT). In addition, increased resources in damage assessment, multi-liaison, multi- desk and NYCOEM roles are required to support the heightened level and frequency of response to such events. These additional responsibilities along with the associated B-Tickets generated requiring Energy Services follow-up on customer equipment repairs, shunt removal, and disconnection of customer's generators will require funding for an estimated 20,000 man hours.
This program would also include the creation of 'Report of Irregular Condition' teams (RIC Teams) who would have the sole responsibility to focus and respond to interdepartmental notifications and referrals of problems at customer locations (that often increase post-storm response).

Inability to fund these additional resources to support this new initiative and heightened response will negatively impact our ability to meet our customer's needs. This program effort would require an additional 6 Full-Time Employees, 11 Equivalent Employees (EOT) and expense recovery associated with additional computers, telephone, desk space, etc.

Justification:
Eliminate "Lack of Customer Connection" as stated in Long Island City Outage (PSC report – Section 5.5.2). With a more heightened focus on mobilizing Energy Services in which such increased mobilization/assistance has already impacted the Department's coordination activities associated with Customer requests for Service Installations and/or Upgrade activities and its availability to communicate with such customers/contractors. Mobilization of Energy Services will and already has increased beyond Major Emergencies, and includes small local events, pre-storm/heat wave mobilization, etc., which if additional resources are not secured, the Department's capabilities in responding to and being available for customer/contractor service installation inquiries, inspections, etc.. Energy Services mobilization during these events routinely involve multiple Regions and 24-coverages.

Estimated Completion Date: Ongoing

Status: New program

Funding ($000) Net O&M Allocation

Historical Year (2007)	Forecast RYE 2010	Forecast RYE 2011	Forecast RYE 2012	Forecast Total
	388	388	388	1164

2009 Operations & Maintenance (O&M)

Project/Program Title	Danger Tree Removal - Distribution
Status	Proposed
Estimated Service Date	April 2009

Work Description:
The Vantage Audit challenges the company to link its emergency management principles with those of its construction and reliability programs. One of the key emergency management principles is assessment, followed by risk prevention and mitigation.

This proposed program, initially submitted in the 2008 electric rate case, seeks to address the emergency management principles vis-à-vis service reliability. The proposed program funds the survey, identification and elimination of off-right-of-way trees that are susceptible to failure, thereby preventing damage to the distribution system.

Justification:
The urban forest of Westchester County is dense and mature. In New York City there are limited areas with similar urban forest characteristics. These areas in New York City are predominantly near the public parks of the Bronx, Brooklyn, Queens and Staten Island. The current line clearance program addresses vegetation along utility easements but is not structured to survey, prevent and mitigate the consequences of service interruptions due to off right-of-way vegetation.

There are many trees off of our right-of-way that pose a threat to the distribution system. Within the vicinity of our lines, there are dead or dying trees that can come down in an adverse weather event and cause disruptions/damage to our electrical lines. In 2007 off right-of-way trees were responsible for 17.1% of the tree related 13kV distribution system outages in Westchester County. On the 4kV distribution system in Westchester County, off right-of-way trees were responsible for 11% of the tree related outages.

The ANSI A300 standards as well as the Con Edison specification EO-10353 in Section 20 recognize the fact that in some cases the most effective pruning for a tree within the right of way is to remove the tree. Trees on the right of way that are scheduled for pruning are removed at a unit cost for cutting the tree, debris removal, waste disposal and chemical treatment of the stump. Currently, the tree is only removed with written permission from the owner of the tree.

EO-10353 is attached:

Adobe Acrobat Document

The program proposed in our exhibits is specifically designed to annually survey, identify and eliminate off right-of-way trees susceptible to failure to prevent damage to the distribution system. The program would enable our inspectors and arborists to request and remove trees out further than our horizontal clearance zone on and off cycle. The current line clearance program does not survey, identify and eliminate danger trees beyond the horizontal clearance zone on and off cycle. The current program and specification we operate under provides for the elimination of trees deemed dangerous in our easement or that will die from excessive trimming as identified during our routine line clearance program (on cycle).

The funding for this program will allow an average of 1 danger tree removal per mile of wire cleared in wooded areas. Of the approximately 1,600 miles per year to be cleared, 900 miles would fall into the wooded area category. Over the course of three years, 2700 danger trees would be removed allowing for a more stable system at the completion of one trimming cycle. This proposal represents 900 danger trees removed per year at the cost of approximately $750.00 per tree.

Estimated Completion Date:
This program is proposed as an annual program.

Status:
Proposed

Funding ($000)

The attached pricing information should be considered confidential as it is the contracted unit costs under our existing contract and may be considered trade information of value to competing vendors.

The attached table shows a breakdown of a tree removal program that would incorporate removals of different size trees to be selected out of the right of way.

Unit Description	2010 cost per unit	danger tree removed	total
REMOVAL - 4" TO 12"	114.85	0	0
REMOVAL - 12.1" TO 19"	229.71	0	0
REMOVAL - 19.1" TO 24"	352.60	300	$105,780
REMOVAL - 24.1" TO 30"	570.53	250	$142,632
REMOVAL - 30.1" TO 36"	855.50	250	$213,875
REMOVAL - 36.1"OR GREATER	1716.29	100	$171,629
		900	$633,916
Average per Tree			$704

The program costs as noted below do not include escalation:

Historical Year (2007)	Forecast RYE 2010	Forecast RYE 2011	Forecast RYE 2012	Forecast Total
0	634	634	634	1902

2009 Operations & Maintenance (O&M)

Project/Program Title	Three Phase Gang Operated Switch Inspection and Replacement
Status	On-going
Estimated Service Date	April 2009

Work Description:
Inspect and replace defective Gang Operated Switches in the 13kv auto loop and the 4kv OH systems on a 10 year cycle. Replace the defective gangs with the new S&C "HOG" manual switch. The new HOG switches are more compact, are operated via hot stick and do not have the long operating arm that comes to the bottom of the pole and which tends to contribute to the misalignment. The inspections will be prioritized based on highest customer count on the auto loops.

Justification:
It is estimated that as many as 20% of the gang switches presently on the overhead system (especially on loops that were built 20 to 30+ years ago) have some type of operating mechanical problem such as misalignment of the switch blades, due to warping of the cross arms, warping of the switch hardware, or due to shifting of the pole. There are a total of 664 gang switches (based on feeder data records), 481 are on the 13kv and 183 on 4kv system in the Bronx/ Westchester region. We estimate 10% have been replaced in the past 10 years, and 90% (504) of the remainder are 20-30 yr old. The priority for inspecting and replacing the gang switches will be on the 13kv auto loops with the highest customer impact.

Estimated Completion Date:
Replace 192 gang switches representing 40% of 481 gang switches on the 13kv auto loop systems by 2018.

Status:
On-going

Funding ($000):
Cost to replace gang switch is 8K each (maintenance) plus 5K for new pole.
Total cost 13K (maintenance)
Note: maintenance cost includes inspections.

21 units-2010, 21 units-2011, 21units-2012

Historical Year (2007)	Forecast RYE 2010	Forecast RYE 2011	Forecast RY E 2012	Forecast Total
78	349	349	349	1,047

2009 Operations & Maintenance (O&M)

Project/Program Title	Line Clearance
Status	On Going
Estimated Service Date	Rate Term

Work Description:
Consistent with the company's proposed Emergency Management Principles, in 2007 Con Edison developed an enhanced line clearance program encompassing appropriate risk prevention and mitigation strategies designed to improve service reliability. Included in the program was an aggressive communications strategy for our customers and other stakeholders that was timely and provided accurate information to those impacted by the work.

The main element of the enhanced program increased vegetation clearances in the Line Clearance specification for Electric Operations. The new clearances, as outlined in the attached document EO-10353, include preferred trimming of 10 foot lateral and bottom clearance, with a 15 foot top clearance and an alternate trim of 6 foot lateral and bottom clearance and a 10 foot top clearance.

Adobe Acrobat Document

The scope of work was expanded to include additional tree removals within the utility easement, more work to reduce the brush interference with the electric distribution system and herbicidal application to cut stumps.

As Con Edison works through its first cycle and communicates and educates our customers of the need of its enhanced program, unscheduled work, known as Emergency B-tickets, have increased due to customer's awareness of tree's impact on service reliability. Additional funding is requested to handle this increased workload which addresses incipient system hazards and is part of the program's recurring outage mitigation strategy. A second component of the Emergency B-ticket funding addresses public safety. As part of the company's public safety philosophy, it will assist local municipalities remove trees deemed a hazard to the public. The trees worked on by the company are known as Hazard Trees and if they are within the work area as defined by the High Voltage Proximity Act (NYCRR Title 12, Chapter I, Subchapter A, Part 57) the company will top the trees, removing vegetation away from the electric wires so the local municipality can continue the remainder of the work safely. With a heightened awareness of tree related outages impacting the functionality of local government, requests for tree toppings have increased significantly from municipalities and the parks department.

As part of the company's response to the Vantage audit, its Emergency Principles are espousing Communications, especially timely and reliable communications. The line clearance program, an important element of the company's prevention and mitigation strategy, also has enriched its communication approach. Drastic changes to the program have required Con Edison to develop a focused line clearance outreach and education program using a variety of communication media including mailing, notification foresters, outreach programs and the internet. Funding is requested to elevate the effectiveness of the communication's plan. The education/outreach program will

inform the public on the importance of planting compatible vegetation, promote the use of compatible species for energy conservation, educate the public on achieving a balance between the aesthetic of a community and the need for service reliability and promote a municipal forestry partnership plan, a basic summary which is attached:

Municipal Forestry Program.doc...

Justification:
The specification was revised in an attempt to reduce tree related outages by 50% over the three year cycle. In Westchester County, tree related outages account for approximately 23.3% of all outages. The new line clearance requirements for Westchester County mimic the standards employed by Con Edison's subsidiary, Orange and Rockland Utilities. They are also similar to the Rural Utility Service's Bulletin 1728F-804 Section M "Specification for Right-of-Way Clearing" and those employed by other utilities such as Central Hudson, National Grid and Northeast Utilities. The clearances for the remainder of the service territory (New York City) were not revised.

This work is necessary to reduce those tree related outages. It will help reduce wires and equipment from being damaged through repetitive contact (wind damage) with limbs and by fallen trees and branches. The 2010 projected contract will have an approximate cost of $6,215 per mile for Westchester County and an approximate average cost of $4,507 per mile for New York City. The program calls for trimming approximately 800 miles per year in Westchester and approximately 800 miles annually in New York City. There will be an average cost of $183 per tree removed. Based upon 2007 performance approximately 11 trees will be removed per mile for a total of $2013 per mile.

The number of B-tickets and topping requests has significantly increased since the inception of the city's 311 phone system, the OH inspection program, and increased customer education of the line clearance program. The funding for the Emergency B-tickets will help reduce tree outages for areas that are identified as incurring recurring outages, minimize customer complaints, and address municipal topping requests. The plan will be to complete 1900 B-tickets per year as well as 1700 toppings per year. The average unit cost per B-ticket is approximately $271 and the average cost per topping is $486. This funding will allow for completing this maintenance without sacrificing the scheduled maintenance program.

The outreach and education component of the program will help improve customer cooperation with the line clearance program. This program will help educate the public and prevent future planting of incompatible vegetation near the distribution system. The municipal forestry partnership program will be a trial program to gain support with the community for the enhanced trimming program as well as promote energy conservation and environmental awareness. The outreach associated directly with the programmed tree trimming will cost approximately $186,000 per year for mailing and educational material. This will cover the printing and postage for eight mailings of 130,000 customers each. This will also cover eight sets of local newspaper ads. The municipal forestry partnership program and community outreach will cost approximately $66,000 for overtime, technical assistance to local government, distribution of educational

material and seedling distribution. We will spend an estimate of 13 cents per non-network customer to meet the requirements of The National Arbor Day Foundation Tree Line USA for compatible tree planting and environmental awareness. We will enhance our outreach associated with this activity through increased correspondence with stakeholders regarding trees near power lines. This will expend approximately $464,000 to all non-network customers.

Estimated Completion Date:
This program is on a 3 year cycle. At the end of 3 years the program starts back on the feeders trimmed in 2007.

Status:
On-going

Funding ($000)

An itemized breakdown of how the funding is proposed for distribution is below:

	2010 DOLLARS	UNITS
Total Program Miles	8,578	1600 miles
Total Program Removals	1,813	9900 trees
Sub-total Program	***10,391***	
Emergency B-Tickets	514	1900 units
Toppings	826	1700 units
Time & Equipment – Adverse Weather	2,109	3 year average
Outreach & Education	716	
Company Labor Management Oversight	426 451	
	15,433	

The program costs as noted below do not include escalation:

Historical Year (2007)	Forecast RYE 2010	Forecast RYE 2011	Forecast RYE 2012	Forecast Total
13,529	15,433	15,433	15,433	46,299

2009 Operations & Maintenance (O&M)

Project/Program Title	Overhead Planning Group
Status	
Estimated Service Date	

Work Description:
Provide six Project Specialists (2-H) and two Senior Specialist (2-L) to coordinate overhead pole design, installation, removal and replacement with company organizations and Verizon, third parties and municipal officials.
The project specialist will work out of the six service centers and forecast and coordinate pole work to Verizon, third parties and municipalities. Work will include emergencies, planning, forecasting, design, construction and demolition of the overhead pole system. Ongoing survey work will ensure the accuracy of the pole system maps and records and negotiations with Verizon and others to ensure the company maximizes joint use and ownership of poles for the greatest benefit to CE. Each pole or structure represents a real estate investment which should be better tracked.

Justification:
In the past, regional overhead construction operating general supervisors were given the task to also plan the overhead construction and their titles were changed to Planners. Unfortunately, the majority of the Planners time is performing the former operating general supervisor's task and planning was not being given the attention it deserves. A 28,929 pole ownership imbalance and a breakdown in communications between the company and Verizon, third parties and municipal officials is indicative of the lack of attention given to planning overhead pole work. It is suggested the existing Planners titles be changed back to OGS and the Planner title be changed to the new positions. The 2-H position would be given for the negotiation work involved with all of the municipal, and Verizon Joint Use Agreement contract work. One Project Manager 3-L title would oversee the entire operation.

NYC DOT and NYS DOT as well as local DPW are complaining of double pole locations which have been left behind OH projects leading municipalities to issue fines for double poles. Also the lack of time leads to less then efficient work practices and records becoming inaccurate.

Municipal fines are $50-250 per double pole location or $3.5 million penalties on 14,000 double pole locations. Annual Carrying Charges on the 28.9k pole imbalance is costing $6-8 million per year and growing in O&M costs. 40% of the 4,000 poles set on average each year would avoid $3.2 million in capital costs if Verizon set their share or 40% of the poles annually.

Total savings would be avoiding potential $3.5m penalties, $7m in O&M and $3.2m in capital for a total cost savings of $10.2m and avoidance of daily fines totaling up to $3.5m.

Vehicles would be take home to allow for after-hours response to coordinate pole emergency setting coordination totaling 8 additional vehicles at $25k per or $200,000. Tools, Computers, and GPS-Trimble units for each employee are $232,000 initially and $10,000 annually after that to upgrade/replace items through 2011.

Estimated Completion Date:
June 2008.

2009 Operations & Maintenance (O&M)

Status:
Pending approval.

Funding ($000)

Historical Year 2007	Forecast RYE 2010	Forecast RYE 2011	Forecast RYE 2012	Forecast Total
0	163	163	163	489

2009 Operations & Maintenance (O&M)

Project/Program Title	Double Wood Pole Program
Status	On Going
Estimated Service Date	2013

Work Description:
The Vantage Audit encourages the development of synergies between the emergency management principles of the company and its construction and reliability initiatives. One of the areas where a synergy exists on the non-network system is as it relates to risk prevention and mitigation, in particular double wood. "Double wood" is a term used when multiple utility poles exist simultaneously at one spot. This proposal continues the program to remove "double wood" poles, and to align funding for the transfer of equipment (O&M) associated with these poles to actual experience.

Justification:
The Vantage Audit encourages the development of synergies between the emergency management principles of the company and its construction and reliability initiatives. One of the areas where a synergy exists on the non-network system is as it relates to risk prevention and mitigation, in particular double wood. "Double wood" is a term used when multiple utility poles exist simultaneously at one spot.

Double wood is generally perceived as an aesthetic issue by local governments since two poles side-by-side is not visually appealing. As an example, in September 2005, the City of Peekskill adopted an ordinance regulating the setting of "unnecessary utility poles," i.e., poles closer than 12 feet apart unless the utility lines in the area cannot be safely carried only by poles 12 or more feet apart. The law requires utilities to file an application ($150 fee per application) for authorization to install or maintain an existing pole a pole within 12 feet of another pole. The law authorizes a 14-day notice to remove an unauthorized unnecessary pole, punishable by a fine of $50 to $250 per day. New installations of unnecessary poles are punished by a fine of $250 to $500 per day from the date the pole is installed.

On February 14, 2006, Peekskill sent Con Edison a letter assessing a $330,400 fine, calculated at a $50 daily rate, for 34 double poles that violate the ordinance. The letter states that Peekskill notified Con Edison to remove these poles on October 25, 2005 and that per-day fines will continue to accrue until the poles are removed. Peekskill also sent Con Edison a separate letter listing 101 additional double poles that the Company is being asked to remove in order to avoid additional fines. Because the ordinance allows a fine of up to $250 per day per pole, future fines could be calculated at a higher daily rate (i.e., more than $50 per day).

Con Edison's Regulatory Services notified Westchester Electric Operations of the need to remove the double poles as soon as possible. They also communicated to Westchester the need to develop a strategy for addressing with Peekskill the immediate and long-term issues presented by the Peekskill law. The Transportation Corporations Law authorizes municipalities to establish "reasonable regulation" of poles.

Aesthetics aside, double wood can represent a safety issue. Initial funding in the 2004 rate case did not fund the transfer of equipment to the new poles. Theoretically the utility is funded to set a new pole and transfer the primary conductor, leaving the secondary, aerial cable attachments and equipment on the old pole. Practically, that does not occur and all equipment is transferred. However, in exercising a prudent and reasonable approach, funding is utilized at an accelerated rate thereby not allowing Con Edison to replace as many poles as it should. The result is older poles, potentially lacking the necessary mechanical strength to handle pole loading under stress or adverse conditions, is left in place and side-by-side a second pole. That double wood has the proper characteristics necessary for the loads and may have been previously set by a third party, due to storm damage, or load relief/system reliability. The net result is the non-network system is not as robust and resilient to adverse weather. By addressing double wood poles in a timely manner the utility can mitigate the consequences of pole failures during adverse events and reduce the reliability and safety risk to the public and the system.

A 2005 field survey identified a large population of double wood poles in the Bronx Westchester, and to a lesser extent in Brooklyn/Queens and Staten Island. Currently, there are over 10000 double-poles back logged in the Regions, over 3600 which have Con Edison attachments. Approximately 280 additional double wood poles are placed on the system annually due to Verizon and Con Edison system construction. In order to address the population of double wood poles in a systematic manner it is proposed that 1210 backlogged poles be transferred and removed per year. This proposal supplements existing funding which did not provide for the transfer of equipment on poles (aerial cable, switches, fused cutouts, etc.), and increases program expenditures as requested.

The following types of equipment are found on poles at the listed percentage:

% of Poles	Type Equipment
60%	Aerial Cable
20%	Switches
20%	Fused cutouts
10%	Vacuum Recloser Switches
5%	Capacitors

Estimated Completion Date:
2012

Status:
On-going

Funding ($000)

The program costs as noted below do not include escalation:

Historical Year (2007)	Forecast RYE 2010	Forecast RYE 2011	Forecast RYE 2012	Forecast Total
2,108	2,648	2,648	2,648	10,052

2009 Operations & Maintenance (O&M)

Project/Program Title	Rear-lot (Backyard) Pole Elimination
Status	New Program
Estimated Service Date	2143

Work Description:
Eliminate backyard electric distribution that provides service to 8,750 customers, and relocate this service to a location that provides easier access. To relocate the services a new point of entry will have to be made at each location to accept the service from the front of the dwelling. Following the design of three projects, we estimate the costs to be approximately $22,000 per service converted. The main driver of this unit cost is the extensive amount of underground infrastructure installation required. These locations are in network areas with existing underground facilities, therefore we are required to install underground services. Estimates indicate that the program will require the installation of 95,000 feet of conduit, 6,700 structures, 21,000 feet of service conduit, 1,200 sections of secondary mains, and 8,600 underground service cables.

Justification:
Access to the 2,800 poles currently installed in the rear of residential dwellings has become problematic. Customers have developed their properties and installed structures, decks, awnings, overhangs, etc. that prevent Con Edison crews from gaining access to these facilities in order to complete essential work. Additionally, the expansion of some of the dwellings has brought the structures to within inches of the minimum safe distance of the power lines. The difficulty in gaining access to the backyards have, in a number of cases, prolonged customer outages, caused lengthy negotiations between the owner and the company regarding access, and prevented routine maintenance to these facilities. In many of these locations, crews have to carry ladders, tools, cable, equipment and poles through customers' houses. On some occasions, during emergencies, police crews had to be dispatched to mediate between neighbors and crews. Due to the age of the pole lines, many of these poles and cables are in need of replacement and customers have experienced frequent outages. The relocation of the pole line from the rear-lot to the front will help to minimize outages, allow for routine maintenance, and eliminate the company's dependency on customer cooperation/presence to perform maintenance and emergency operations.

Three examples are used to depict the problems that are being encountered. The examples below refer to pages in appendix A.

Example 1: Appendix A pages 1-3: Proximity to buildings and structures.
Page 1 shows the actual undermining and I-beam temp support of a backyard pole placed by contractors during construction. While we do not have actual pictures of the backyard lines, you can see from Page 2 that the rear property lines are running within inches of the minimum allowable clearance from the large apartment building. This is a problem as it poses a risk to public safety. Page 3 is the M&S plate of the area.

Example 2: Appendix A pages 4 & 5: Lack of proper access.
The areas in the aerial photos (page 4), that are circled in yellow, have backyard pole lines. Page 5 is the M&S plate of this area. As shown in the photo on page 4, there is NO access into the "Courtyard" except through a customer's home. When a pole in this situation requires replacement, the pole would be carried through a customer's home (i.e. through their living room, kitchen, and into the backyard).

In addition, the courtyard is not completely open. If a repair to a span is required, access through two or more homes is required (each pole location and where the problem with the wire has occurred). We are dependent on customers granting us access THROUGH their house, possibly in the middle of the night, to repair something that is not even affecting them. During storms or contingencies, this lack of access may result in dangerous situations remaining unaddressed until a customer grants the crew access to the affected area. This poses a risk to public safety, as well as a delay to restoration.

Example 3: Appendix A page 6: Lack of Access.

The rear-lot overhead is fed from both ends of the block via underground secondary and risers. As shown on page 6, underground feeds to the backyard overhead becomes inaccessible when a property owner expands his building and covers up the manholes. If a secondary burnout occurs in this area, there could be no access to the manholes if the customer denies the Company access by not allowing us to break up his restaurant floor to get at the manholes. As a result, the feed would have to be cut at the street and at the riser pole in order to isolate the burnout, possibly resulting in low voltage due to insufficient support for the block.

Estimated Completion Date:
2143

Planning and Budgeting:

Services	Cost/Service	Total Cost	Program Years	Cost/Year
8,750	$ 22,000	$ 192 M	135	$ 1.437 M

Due to the nature of the work, there is O&M involved in this project. It estimated that it is about 100% of the capital cost. Costs will be incurred to rearrange the way the customer is serviced inside customer property.

Status:
New Program

Funding($000)

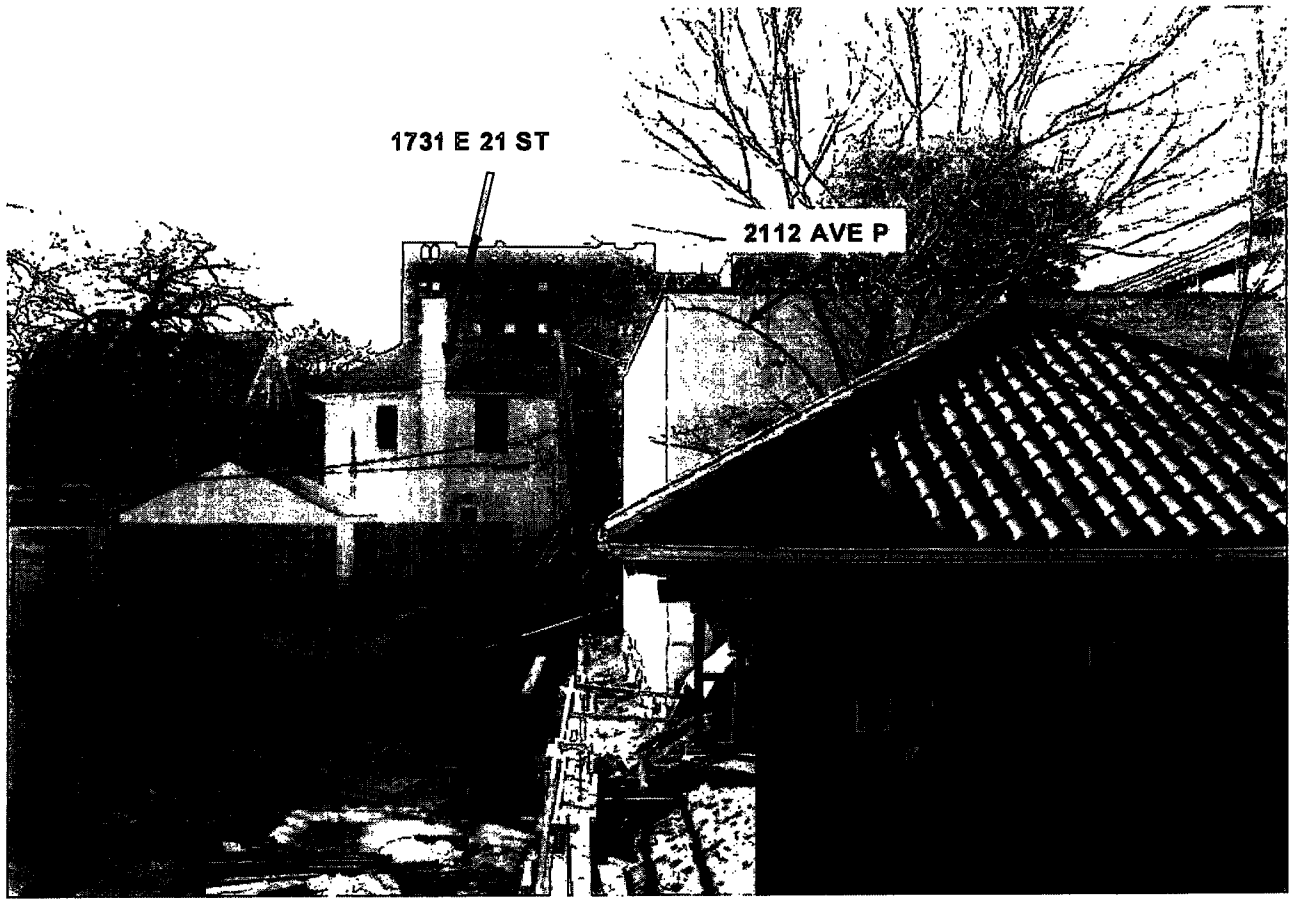
Capital

Forecast 2009	Forecast 2010	Forecast 2011	Forecast 2012	Forecast Total
1,437	1,437	1,437	1,437	5,748

O&M

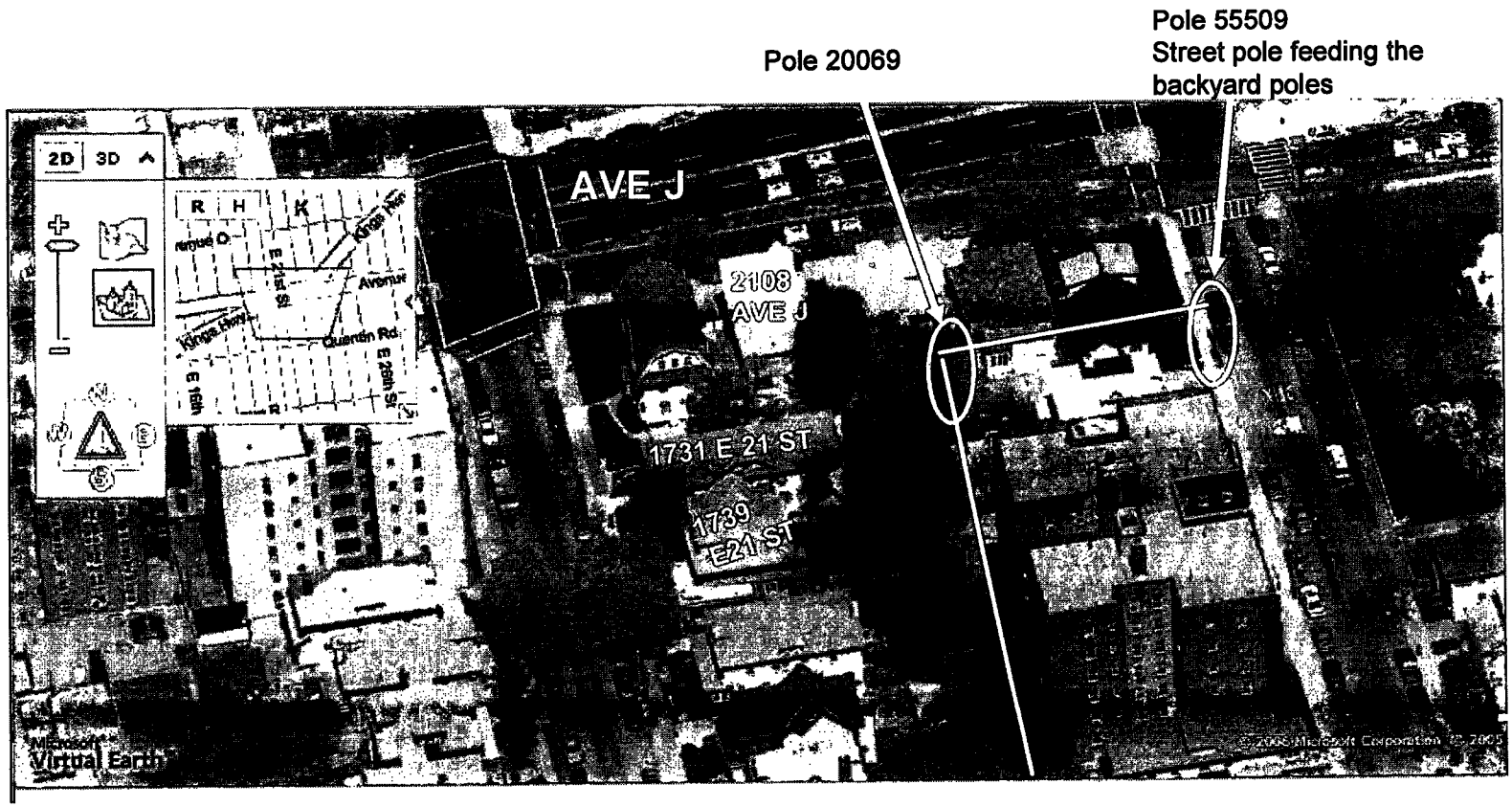
Forecast 2010	Forecast 2011	Forecast 2012	Forecast Total
1,437	1,437	1,437	4,311

Appendix A:



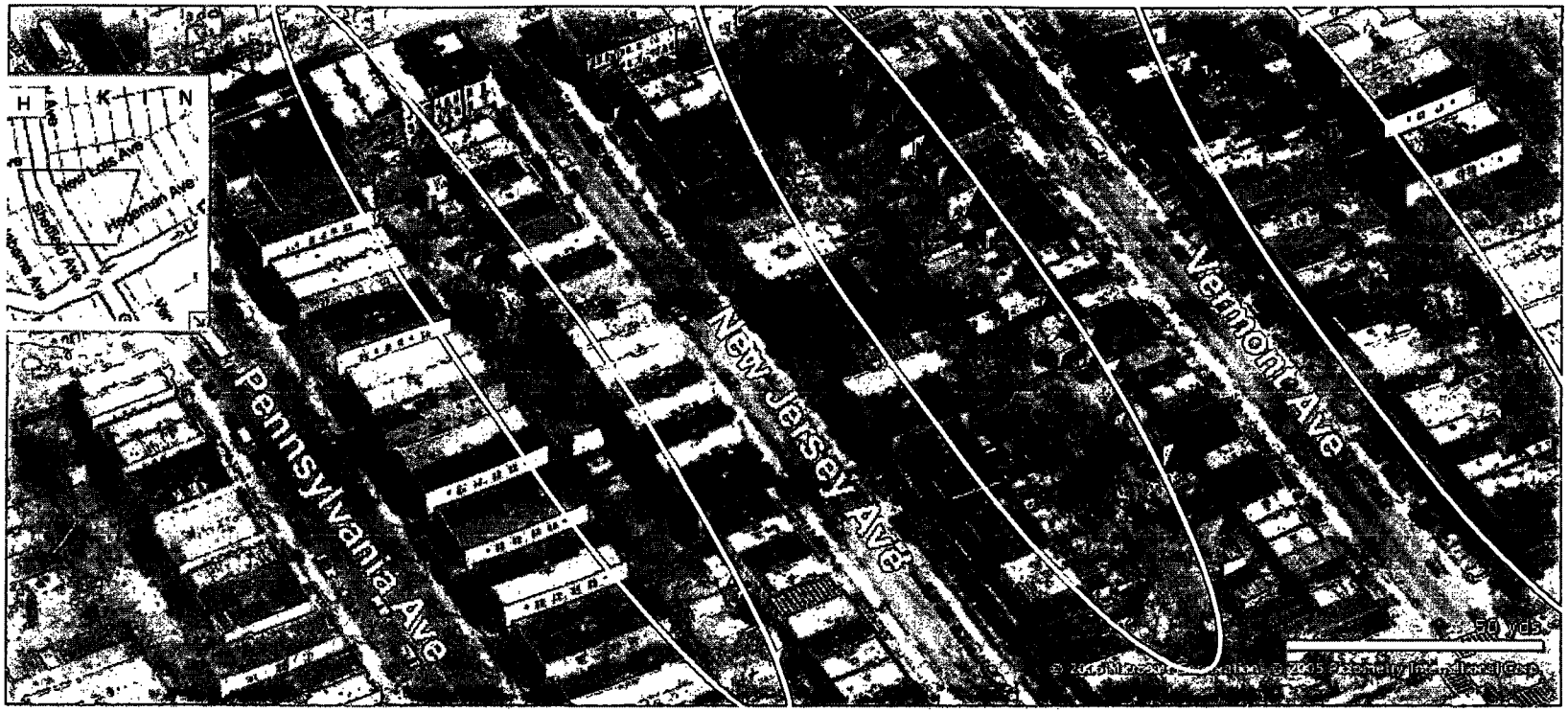
Backyard pole is being braced with I-beam. Pole is undermined and in bad condition.

1



Drawn in Yellow, the backyard OH lines run within inches of the minimum allowable clearance from the apartment building

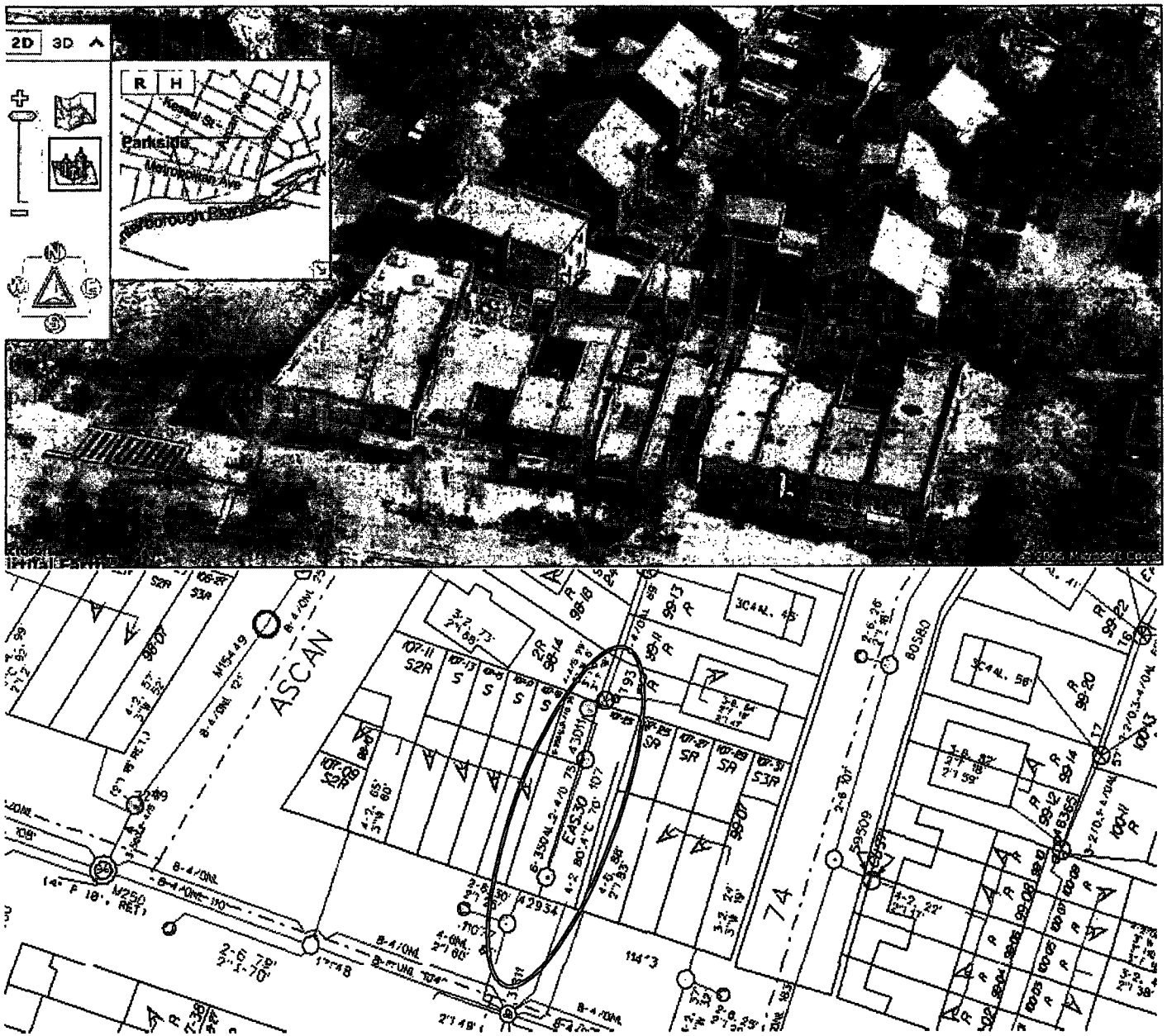
2



The backyards are enclosed courtyards. As shown above, the houses are ATTACHED row houses. There is NO access to the courtyard except THROUGH a house. When these poles require replacement, crews need to bring a pole through a customer's living room to get to the backyard.

4

2009 Operations & Maintenance (O&M)



UG feeds to the rear-lot OH are no longer accessible. Manholes have buildings built on top of them.

For example, a burnout in the highlighted area could not be addressed, and possibly would result in a low voltage condition.

CONSOLIDATED EDISON COMPANY OF NEW YORK, INC.
CAPITAL AND O&M
ADVANCED TECHNOLOGY
SUBSTATION OPERATIONS

DESCRIPTION	Page #
Reference Substation Operations - O&M - IIP-3	
Telecommunications (System Expansion / Digital Fiber Optics)	2
Advanced Control Systems Group	3

Substation Operations – 2009 O&M

Project/Program Title	Telecommunications (System Expansion / Digital Fiber Optics)
Status	On-going
Estimated Service Date	2007-2012 (on-going)

Work Description:
Incremental O&M costs for the telecommunication expansion for new facilities associated with additional Wide Area Networks (WAN) and Local Area Networks (LAN). Also included are the incremental costs associated with the conversion of analog circuits to digital fiber optics on the Con Edison system...

Justification:
Substation Operations requires incremental telecommunications funding to adequately address system expansion for increased WAN (Wide Area Networks) and LAN (Local Area Networks) related to additional substations on the Transmission and Distribution System, as well as increased telecommunication needs. The current construction schedule of our new facilities has resulted in incremental funding requirements over our previously approved levels. The Company will continue with its telecommunications upgrade program, which calls for the converting our existing analog relay protection circuits to digital fiber optics circuits. This project is required to increase reliability for relay protection and is necessitated by the fact that Verizon will no longer provide maintenance support for our existing analog systems. The O&M impact to Substation Operations is anticipated to increase by $216k in RYE 2010, $352k in RYE 2011 and $687K in RYE 2012.

Estimated Completion Date:
2007-2012 (On-going)

Status:
On-going

Funding ($000)

Historical Year 2007	Forecast RYE 2010	Forecast RYE 2011	Forecast RYE 2012	Forecast Total
751	967	1,103	1,438	3,508

Substation Operations – 2009 O&M

Project/Program Title	Advanced Control Group – HMI / Digital Fiber Optics
Status	On-going
Estimated Service Date	2008-2012

Work Description:
Sophisticated and specialized skill sets are required to effectively maintain, test and troubleshoot state-of-the-art digital control systems. Program scope includes formation of a dedicated group to develop personnel with the necessary skill sets to support these advanced control systems (Human Machine Interface, application of digital fiber optic technology, and Dielectric System Automation)

Estimated incremental human resource requirements for support of advanced control systems now being deployed across the system include (4) four technicians, (1) one engineer and (1) one Information Resources Supervisor. Incremental expenses also include vendor costs for support, parts and training.

Justification:
New substations recently commissioned as well as those that are currently under construction or being planned as part of future load relief and reliability programs are being deployed with state-of-the-art digital control systems. These control systems are also being installed in existing facilities across the system as control systems are renewed and upgraded. This system expansion and technology transition has created the need for the development of internal expertise and capability to support ongoing maintenance of these systems. The need for this internal capability is further driven by the fact that recently installed systems are no longer covered by the original equipment manufacturer's warranty and vendor support for these systems has proven to be limited in terms of availability and reliability. This program will help ensure a continued high level of system reliability.

Estimated Completion Date:
2008 to 2012 (on-going)

Status:
On-going

Funding ($000)

Historical Year 2007	Forecast RYE 2010	Forecast RYE 2011	Forecast RYE 2012	Forecast Total RYE 2010-2012
-	830	880	930	2,640

CONSOLIDATED EDISON COMPANY OF NEW YORK, INC.
CAPITAL AND O&M
ADVANCED TECHNOLOGY
SYSTEM & TRANSMISSION OPERATIONS

DESCRIPTION	Page #
Reference System & Transmission Operations - O&M - IIP-5	
AECC Equipment Support And Maintenance	2
Communications Infrastructure	3
NERC And EMS Training	4
New EMS System License Maintenance	5
Reference System Operations - Capital - IIP- 9	
Energy Management Systems	
Replacement Program SOCCS-X Energy Management System	6
Work Management Systems	
Distribution Orders Enhancements	7
Outage Scheduling System	8
EMS Continuance	
EMS Continuance AECC and ECC	9
Operation Requirements (On-Line Systems)	
Interface With NYISO	10
Maximum Generation / Fast Load Pick-Up	11
GT Remote Start System	12
Plant Information System	13
Cyber Security	14
EMS For Electric/Steam Operation	15
Operations Network For EMS	16
District Operations Improvement	
System Operation Enhancements	17
District Operator Task Managing System	19
Operation Management System Enhancements	20
Bulk Power Improvements	
SOCCS Visualization	21

2009 System and Transmission Operations – O&M

Project/Program Title	Alternate Energy Control Center - Equipment Support and Maintenance
Status	
Estimated Service Date	

Work Description:
This program provides the necessary support and maintenance for critical infrastructure installed as part of the establishment of the new Alternate Energy Control Center (AECC) including support of the facility.

Justification:
The new AECC was designed and constructed to be fully independent of the Energy Control Center. These designs allowed for the computer systems to work as one during normal conditions while also allowing for isolation of the systems should an emergency condition exist. This design included providing permanent on site diesel back-up generation, dual Uninterruptible Power Supply systems, and multiple levels of security systems including cameras, bio-metrics, central station monitoring and card access. Each of these systems requires periodic testing and maintenance to ensure proper operation while maintaining a high level of security for the systems and facility. Additional services were also provided at the AECC to further ensure operability upon activation such as redundancy for the computerized notification system used by the Central Information Group, and satellite access to weather information and the NYISO.

In addition, the building system associated with the new AECC, such as the HVAC, lighting and Fire Systems, will require maintenance and support annually. In addition to the sites emergency availability, the new AECC location will be used in a training environment for the Transmission and Distribution operators. As such the facility will require routine and periodic maintenance as frequently as a typical office location as opposed to a dormant emergency site. Contract support services will be provided for scheduled maintenance and cleaning.

Funding ($000)

Historical Year 2007	Forecast RYE 2010	Forecast RYE 2011	Forecast RYE 2012	Forecast Total RYE 2010 - 2012
102	400	400	400	1,200

2009 System and Transmission Operations – O&M

Project/Program Title	Communications Infrastructure
Status	
Estimated Service Date	

Work Description:
This program ensures that the communication infrastructure needed to operate the Transmission and Distribution systems is supported and maintained at both the Energy Control Center and the Alternate Energy Control Center. This includes corporate improvements to system infrastructure and costs associated with provided maintenance of these systems.

Justification:
Both provider based services and the expanded corporate telecommunications networks are required to provide the data and voice communication needs for the operators to operate the system and maintain contact with field operations personnel. The increased costs in this area are predominately driven by:

- Expansion of communication requirements, driven largely by the introduction of the new Alternate Energy Control Center (AECC): The Energy Control Center (ECC) and the new AECC rely on provider based and corporate based communications systems. The new EMS requires communication to multiple locations to allow for these two control centers to operate with full independence.

- Frame relay costs to expand the communication from Distribution Substations to the AECC: over the next several years, the communication infrastructure to the Distribution System Substations will be upgraded to frame relay, similar to the upgrade that was recently completed on the Transmission System Substations. This upgrade to frame relay will provide the necessary data to both control centers and will replace the standard analog copper circuits.

- The Verizon TLS system upgrades to allow for expansion of fiber communications capability.

Funding ($000)

Historical Year 2007	Forecast RYE 2010	Forecast RYE 2011	Forecast RYE 2012	Forecast Total RYE 2010 - 2012
4,557	5,100	5,100	5,100	15,300

2009 System and Transmission Operations – O&M

Project/Program Title	NERC and EMS Training
Status	
Estimated Service Date	

Work Description:
This program change supports an increase in operator training requirements for NERC compliance and planned training for operation and support of the EMS systems.

Justification:
In order to maintain NERC operator certification additional training expenses are anticipated for operators to achieve the required training educational units. Available training programs and NYISO certified training will need to be supplemented through new training programs to meet the prescribed training hours for certification.

In addition, ongoing training is planned for operations support staff for the new Energy Management System. This training will be provided by the manufacturer and will cover all levels of the system. This program will allow for continued training on this new system for new and incumbent personnel.

Funding ($000)

Historical Year 2007	Forecast RYE 2010	Forecast RYE 2011	Forecast RYE 2012	Forecast Total RYE 2010 - 2012
91	155	155	155	465

2009 System and Transmission Operations – O&M

Project/Program Title	New EMS System License and Maintenance
Status	
Estimated Service Date	

Work Description:
This program provides the essential License and Maintenance support for the new Energy Management System (EMS) and all other control center systems. These annual costs are based on vendor requirements for providing rights to use, hardware support and patch maintenance for these systems, and for providing operational system support.

Justification:
The new EMS is comprised of equipment and software from multiple vendors. The rights to use, hardware support and continued rights to patch release updates require maintaining annual support contracts directly with the manufacturers or EMS provider. The new EMS is a fully redundant system at the Energy Control Center and at the Alternate Energy Control Center. This dual redundant configuration, at fully independent sites, has increased the number of systems that require license and maintenance agreements. In addition, the legacy systems that the new EMS has replaced were not bound by many license agreements, as is the new system. The SOCCS transmission EMS and the SOCCSX distribution EMS did not have manufacturer license offerings due to their age. The legacy system also did not carry multiple third party vendor software license requirements.

In addition, the new system will require ongoing manufacturer support of applications and computer systems. These contract support services will provide vendor support for system issues, on-site maintenance support for increased number of system servers and the multiple large projection walls. The new system will also require more frequent patch release updating as the systems have now moved from priority operating systems to mainstream products.

Funding ($000)

Historical Year 2007	Forecast RYE 2010	Forecast RYE 2011	Forecast RYE 2012	Forecast Total RYE 2010 - 2012
-	700	700	700	2,100

System Operation – 2009 Capital

Project/Program Title	ECC - Replacement Program SOCCS-X Energy Management System
Status	In progress
Estimated Service Date	December 2009

Work Description:
The System Operation Computer Control System Expansion (SOCCS-X), commissioned in 1991 will be replaced and incorporated into the newly commissioned Energy Management System (EMS) that will have replaced SOCCS. This is the second phase of the new EMS project, which incorporates the supervisory and control aspects of both the transmission and distribution systems on the same computer platform. This project will include the specification, procurement, design, testing and final commissioning of a new EMS system.

Justification:
The SOCCS-X system design is based on a 1990 software platform and contains many custom features. The customized features associated with the SOCCS-X system have significantly increased the complexity associated with completing platform updates to the existing SOCCS-X system. Estimates have exceeded $3M for the latest platform on existing hardware. The age of the system and its hardware limitations would be better addressed through its replacement and incorporation of its functionality into the new Transmission platform. A single platform will provide consistency for both the transmission and distribution system and will better support operator familiarity between systems.

Estimated Completion Date:
December 2009

Status:
The contracted vendor has been authorized to start the SOCCS-X project. Design documentation is being written and vendor work has started.

Funding ($000)

Forecast 2009	Forecast 2010	Forecast 2011	Forecast 2012	Forecast Total 2009 - 2012
2,000	-	-	-	2,000

System Operation – 2009 Capital

Project /Program Title	ECC - Distribution Orders Enhancements
Status	In progress
Estimated Service Date	On-going

Work Description:
Enhancements have been designed to provide for increased electronic issuance of operating orders, and enhanced disaster recoverability of these critical systems. New interfaces to corporate databases will be developed so that additional equipment information is available to operations automatically with a singular interface. The capability for the District Operator (D.O.) will also be expanded to include new tools that will provide advanced visual connectivity capabilities, aiding in visualization of feeder and equipment changes and verification of operating rules. Interfaces to field operations and regional control centers will be expanded to the new alternate control center to provide disaster recoverability at an independent site. The expansion of distribution orders automation to other working groups such as Overhead and Emergency groups is also being planned. This work would include software applications and hardware in field locations to support the new functionality.

As additional enhancements are identified that further support a reduction in feeder processing time or aide in the prevention of operating errors, appropriate tools will be developed and implemented.

Justification:
In order to further reduce feeder-processing time, additional areas in distribution order automation need to be implemented and enhanced. Systems need to be upgraded to keep pace with technology requirements and to support increased needs.

The complexity of the transmission and distribution systems and their overlapping relationships rely heavily on informed operators equipped with state of the art tools. The interconnection of generation and the nature of interconnected operation continue to create challenges that require fast and well-informed responses to system conditions. This combined with one of the largest underground cable systems in the world presents a daunting task to operators who, while assuring reliability of the transmission and distribution systems, must also process work efficiently in a way that insures workers are protected. Therefore, it is beneficial that enhanced information technologies and independent disaster recoverability be leveraged to support these objectives.

Estimated Completion Date:
On-going

Status:
In 2007 user requested enhancements to existing interfaces have been added including the automation of the In-Service Work Permits. The development of an interface to the Distribution Switching System is being developed to the Regional Control Centers.

Funding ($000)

Forecast 2009	Forecast 2010	Forecast 2011	Forecast 2012	Forecast Total 2009 - 2012
250	250	300	350	1,150

System Operation – 2009 Capital

Project/Program Title	ECC - Outage Scheduling System
Status	Planning
Estimated Service Date	December 2010

Work Description:
This project will rewrite the current Outage Scheduling System (OSS) application to provide improved flexibility, new user interface and new capabilities. The proposed application is to add capability to allow recommend/create implementation schedules based on planned and unplanned equipment outages and other system factors. This new system will enable improved outage scheduling by increasing overall efficiency of the complete work process. A multi-organization team has started to develop project scope in 2007 and will continue into the first half of 2008, with plans to start work in late 2008. Development funding continues through 2010.

Justification:
The function of the OSS is to allow users to enter a request for equipment to be taken out of service. The system also provides the capability for the Scheduling District Operators to efficiently schedule the Outage Requests into Scheduled Work Packages. OSS stores and maintains data about outage statistics for all service areas. This effort has the potential to consolidate work efforts and reduce the number of equipment outages. The new system will have a tremendous impact on our productivity and reliability by completely automating the process. Additionally, this new system will gather data from existing work databases, get real time system input, automatically perform contingency analysis and then inform the working groups when they can perform the work. This will be a dynamic system which will efficiently manage our work and will reduce the number of hours exhausted in entering data, manually confirming outage dates and dispatching people and material. The system will also enable us to comply with evolving outage tracking, notification and reporting requirements by various agencies.

Estimated Completion Date:
December 2010

Status:
Detailed requirements are being developed as of 1st quarter 2008.

Funding ($000)

Forecast 2009	Forecast 2010	Forecast 2011	Forecast 2012	Forecast Total 2009 - 2012
3,000	3,000	-	-	6,000

System Operation – 2009 Capital

Project/Program Title	ECC - EMS Continuance AECC and ECC
Status	Planning
Estimated Service Date	On-going

Work Description:
This program will provide both operating system and hardware upgrades for the new Energy Management System (EMS) based on the manufacturers release guidelines. The new EMS for the transmission and distribution system will be upgraded periodically to ensure that the latest improvements from the manufacturer are added to our system and to ensure that the hardware is upgraded to ensure compliance with the needs of new operating systems.

Justification:
The new EMS is being delivered with the latest hardware and software, both currently compliant with the operating requirements of the EMS operating systems. In order to maintain the system at peak performance and to ensure that the latest advancements developed by the manufacturer are utilized, periodic system upgrades will be made to the system. Through continued periodic upgrades, we will ensure that the manufacturer will be able to maintain our systems for many years. These upgrades will also ensure that future computer systems will interact properly with the manufacturers' applications. Continued support is necessary to maintain a fully integrated system working at peak performance.

Estimated Completion Date:
On-going

Status:
Planning

Funding ($000)

Forecast 2009	Forecast 2010	Forecast 2011	Forecast 2012	Forecast Total 2009 - 2012
-	500	1,000	500	2,000

System Operation – 2009 Capital

Project /Program Title	ECC - Interface With NYISO
Status	
Estimated Service Date	On-going

Work Description:
Upgrades to the ECC EMS system need to be placed into operation to support changes and new requirements from the New York Independent System Operator.

Justification:
In order to continue operation and support transmission of data to and from the ISO and market participants, our EMS must be able to communicate with the NYISO. As the NYISO deploys new systems and as the market rules changes, our system along with the system of other NYISO members must be modified to adapt to these new requirements and guidelines.

Estimated Completion Date:
On-going.

Status:
This project will remain open to support any new NYISO requirements as they are identified by the NYISO.

Funding ($000)

Forecast 2009	Forecast 2010	Forecast 2011	Forecast 2012	Forecast Total 2009 - 2012
100	100	100	100	400

System Operation – 2009 Capital

Project/Program Title	ECC - Maximum Generation/Fast Load Pick-Up
Status	In progress
Estimated Service Date	December 2009

Work Description:
This project will incorporate the Maximum Generation and Fast Load Pick-Up functionalities into the station Remote Telemetry Units (RTU). This change would require adding control and possibly indication points to each station RTU for receipt and initiation of the control room alarm.

Justification:
This functionality is not replicated at the current AECC and we do not have the ability to add more Gen Stations to this system as this system cannot be supported as designed at the new (or existing) AECC. The existing Max Generation (MAX Gen) and Fast Load Pick-Up (FLPU) capability initiates a signal to all generating station control rooms and Gas Turbine sites requesting that the units output be raised at the Maximum Generation or Fast Load Pick-Up rate. This request is initiated at the ECC via a two position switch on the SO console, from which the SO can select either Max Gen or FLPU.

The switch is connected to relays that tie one leg of a 125VDC direct copper wire connections to each Generation Unit control room to ground for MAX Gen and the other leg for FLPU. The grounding of the wire causes relays at the Generation Stations to sound the appropriate alarm.

This change would require adding control and possibly indication points to each station RTU for receipt and initiation of the control room alarm. The EMS would be modified to accept these points, and a single display would be designed to initiate the requests.

Estimated Completion Date:
December 2009

Status:
In 2007 the capability was bridged to the new EMS at the ECC using existing infrastructure. The second phase of this project requires field changes and engineering, and coordination with current generation owners.

Funding ($000)

Request 2009	Request 2010	Request 2011	Request 2012	Total Request 2009-2012
400	0	0	0	400

System Operation – 2009 Capital

Project/Program Title	ECC - GT Remote Start System
Status	In progress
Estimated Service Date	December 2009

Work Description:
This project will incorporate the GT Remote Start functionality into the station Remote Telemetry Units (RTU). This change would require adding control and possibly indication points to each station RTU for receipt and initiation of the start-up sequence for remote GT's.

Justification:
This functionality is not replicated at the current AECC. To support this functionality at the primary ECC and to provide this capability at the alternate ECC, the control functionality will be moved to the unit RTU. This change would eliminate the local and remote RFL equipment and use the standard functions available in an EMS system to perform this control action. The EMS would be modified to accept these points, and a single display would be designed to initiate the requests.

Estimated Completion Date:
December 2009

Status:
In 2007 the capability was bridged to the new EMS at the ECC using existing infrastructure. The second phase of this project requires field changes and engineering, and coordination with current generation owners.

Funding ($000)

Request 2009	Request 2010	Request 2011	Request 2012	Request Total 2009-2012
600	0	0	0	600

System Operation – 2009 Capital

Project/Program Title	ECC - Plant Information System
Status	On-going
Estimated Service Date	December 2010

Work Description:
The existing data information and archiving system will be expanded to provide additional redundancy and enhanced security. A second server will be installed outside the firewall and modifications will be made to provide support for outside interfaces. This unsecured information will be password protected for corporate access.

Justification:
The increased need for information to be provided to other critical organizations within Con Edison but outside of the Energy Control Center (ECC) has taxed the ECC's data archival system. This enhancement would include a second server, which would allow for the longer-term reliable operation of this information system. In addition, the existing system allows very limited access as a cyber security precaution. The deployment of a system solely for external use would allow more users access to this data, providing needed information for studies and analysis, more quickly and efficiently.

Estimated Completion Date:
December 2010.

Status:
The server hardware at the ECC has been upgraded and moved into production. The software has also been upgraded and the replication to the PI server on the corporate network finalized.

Funding ($000)

Forecast 2009	Forecast 2010	Forecast 2011	Forecast 2012	Forecast Total 2009 - 2012
-	300	-	200	500

System Operation – 2009 Capital

Project /Program Title	ECC - Cyber Security
Status	Planning
Estimated Service Date	On-going

Work Description:
Evaluate, select and install a cyber intrusion detection system (IDS) to protect the EMS systems at the ECC. System Operation is investigating a multi-technology approach to Network Intrusion Detection System (NIDS) using Signature Detection at the perimeter and Anomaly Detection on the internal and adjacent external network segments. The proposed NIDS will require hardware appliance sensors, new network hardware, and new function add-ons for the ECC network's perimeter security devices. In addition changes will be made to address new security measures as they are identified including any compliance items based on the new North American Electric Reliability Corporation (NERC) Cyber Security Standards.

Justification:
The importance of maintaining the operability of the network infrastructure that the EMS system resides is important for the reliable operation of the system. System Operation currently uses firewalls to protect the network at its perimeter. Intrusion detection technology is the next step in controlling the opportunity for harm. Intrusion Detection Systems can reveal intruder activity within the protected infrastructure and on its periphery as well as at its perimeter. This next step will afford a higher level of protection by warning of attempted intrusions.

The company's regulating entities also recognize the value of IDS and either have or propose requirements and standards compliance for IDS implementation.

Estimated Completion Date:
On-going.

Status:
During 2007 a full analysis of the approved NERC Cyber Security requirements was continued, and a plan for any necessary changes and continued hardening of network will be addressed where required. Plans will need to be developed to ensure compliance with the recommended cyber policy within the prescribed compliance period.

Funding ($000)

Forecast 2009	Forecast 2010	Forecast 2011	Forecast 2012	Forecast Total 2009 - 2012
200	300	200	300	1,000

System Operation – 2009 Capital

Project/Program Title	ECC - EMS for Electric/Steam Operation
Status	
Estimated Service Date	September 2010

Work Description:
Develop and install a new Energy Management System (EMS) for operation of the Steam system. This will ensure connectivity to electric generating plants that also generate steam. The program will include the development of the design specification, selection of vendors and installation of a redundant and independent EMS for the Steam system. The Energy Dispatcher for Steam and Electric, at the Energy Control Center, will use this system.

Justification:
The Electric EMS used to operate the Steam system is scheduled for retirement in 2009 and is not suited for upgrade nor can it provide new and diverse functionality needed for the operator. This new EMS will obtain data from the combined electric/steam producing plants, steam plants and street metering points, and will provide programs and improvements to support the needs of the operator. Advanced computer systems and models will be utilized to support the operators, and provide improved tools for system planning and analysis. Safety of both our employees and the public will be an underlying tenant in all that we do. While program and improvement initiatives will be used to take us to the next level, day-to-day operating performance will continue to receive a high level of focus, as it remains the best overall measure of the organizations' accomplishments.

Estimated Completion Date:
September 2010

Status:
Project team has begun process to evaluate and determine scope. Selection of vendor and award planned for middle of 2008. Funding requirements extend to 2010 for this project.

Funding ($000)

Forecast 2009	Forecast 2010	Forecast 2011	Forecast 2012	Forecast Total 2009 - 2012
2,000	1,500	-	-	3,500

System Operation – 2009 Capital

Project/Program Title	ECC – Operations Network for EMS
Status	On-going
Estimated Service Date	

Work Description:
The network infrastructure at the Energy Control Center will be upgraded and expanded. New firewalls, routers and switches will be added. The network wiring will also be upgraded to support data transmission at a wider bandwidth.

Justification:
Increased demands on the existing network infrastructure, increased firewall protection and more communications between application systems necessitate continued improvement. In order to take advantage of newer technologies, supporting infrastructure needs to be deployed that will accommodate increased data transfer. As more network-based systems are deployed data traffic on the existing infrastructure is subject to bottlenecks. To maintain the integrity of the network and to provide uninterrupted system communication for operational systems, these enhancements need to be pursued.

Estimated Completion Date:
On-going.

Status:
The internal network cabling has been converted to CAT-5 and the new giga-switches are in service. Access to the corporate network has been greatly improved. The new fiber optic network backbone has been installed and has been cutover. Development plans for new firewalls are currently being studied.

Funding ($000)

Forecast 2009	Forecast 2010	Forecast 2011	Forecast 2012	Forecast Total 2009 - 2012
100	450	200	200	950

System Operation – 2009 Capital

Project/Program Title	ECC – System Operation Enhancements
Status	In progress
Estimated Service Date	On-going

Work Description:
The new District Operation Automation process will allow the District Operator (D.O.) to issue groups of switching moves simultaneously to involve field operating groups. Major software changes and new applications need to be developed to support this enhanced processing sequence and its system dependencies. An electronic work order interface with Verizon to enhance and better manage tracking critical protection circuit repair is being developed. A software interface will be developed that will provide current status of protective circuits out for repair. This interface will also provide the capability to issue repair request to Verizon electronically.

This project will increase automation of parts of the electrical operating order process by utilizing a computer directed format for setting up in advance an automated sequence of operating orders. This will be accomplished by making use of existing systems and also through deployment of new interfaces. These systems, new and existing, will work seamlessly with one another.

Justification:
The District Operator coordinates and directs all switching operations and permits to work on Con Edison's transmission and distribution systems, ensuring safety to personnel and safe operation of equipment while minimizing downtime. District Operators perform over 500,000 operations per year. The sheer volume of work, coupled with the complexity of the systems, the variety of equipment types, and associated set of operating rules and requirements have made the District Operator's job extremely challenging.

Process Automation will enhance the operating environment. By eliminating routine handoffs, the D.O. can afford to devote more time to analyzing complicated situations thoroughly prior to issuing orders, lessening opportunity for an operating error while also reducing feeder restoration time.

These system enhancements support the effort to continuously improve our operating efficiency, by increasing the productivity of field and substation personnel and reducing feeder-processing time.

Estimated Completion Date:
On-going

Status:

Addition of black start scenarios and enhancements to Hi-pot criteria has been added this past year. Additional enhancements are being reviewed and implemented.

- Distribution feeder process automation to eliminate routine handoffs between sequential orders for different operating groups.
- Secure electronic interface with Verizon to field organizations for efficient processing of troubled telephone circuits associated with protection or controls
- Intranet Relay TeleProtection Matrix client interface for Control System Engineering to automate the information flow between CSE and ECC.

System Operation – 2009 Capital

- Functions to minimize operating errors and reduce feeder restoration time.

Funding ($000)

Forecast 2009	Forecast 2010	Forecast 2011	Forecast 2012	Forecast Total 2009 - 2012
250	400	300	300	1,250

System Operation – 2009 Capital

Project /Program Title	ECC – District Operator Task Managing System
Status	In progress
Estimated Service Date	On-going

Work Description:
This project has been established to enhance the issuance of operating orders and the tracking of status changes on the transmission and distribution system. The Task Management system will provide the District Operators (D.O.) with a timely and integrated view of all jobs within their specific jurisdiction requiring operator action.

The new software functionality includes computerized warnings and other indications that will facilitate timely and error free feeder processing. New operator consoles will be added to support these new applications. The new integrated console environment will provide new graphical interfaces that will allow the operator to view and interact with various systems to obtain outstanding tasks and exception conditions using concise data summaries and prioritized graphical presentations. Messages and outstanding tasks will be monitored for exceeding expected time durations, as well as delay and alarm conditions. The system will be integrated with the Outage Scheduling System to obtain necessary restrictions on feeders. The task manager implementation was started in late 2003 and is planned to be implemented and completed in phases.

Justification:
An enhanced D.O. environment will better facilitate continued efficiency. The District Operator coordinates and directs all switching operations on Con Edison's transmission and distribution system. To meet these job responsibilities, the D.O. must use multiple computer systems. These include the new XA system, SOCCSX, Feeder Management System (FMS), Transmission Operation Management System (TOMS), Telephone Line System (TLS), and other corporate systems such as Rapid Restore, DO Direct, Outage Scheduling System (OSS), etc. Each of these systems has different user interface, and operates from different vendor platforms and operating systems. This enhancement project will allow the operator to more efficiently manage the varied and multiple systems needed to perform their critical tasks from a common graphical interface.

Status:
TOMS management reports on transmission feeders, breakers and transformers has been completed. The next phase, which is underway, will be the automatic download of TOMS operating steps and status information to Information Resources (IR) intranet application Critical Transmission and Substations Equipment Outage Status (CTSEOS). This will provide transmission system status to the company, similar to the download of FMS to the Feeder board for the distribution system.

Funding ($000)

Forecast 2009	Forecast 2010	Forecast 2011	Forecast 2012	Forecast Total 2009 - 2012
250	400	250	300	1,200

System Operation – 2009 Capital

Project/Program Title	ECC - Operation Management System Enhancements
Status	
Estimated Service Date	December 2012

Work Description:
This project will address upgrades to the Operations Management Systems computer systems and provide for expansion of these systems to better support the needs of the operators and field services. This work will also support infrastructure needed for replication of systems at the Alternate Energy Control Center for disaster recoverability.

Justification:
The Operations Management Systems will be maintained and expanded to meet the growing operational needs and to maintain a reliable work management system. As application needs grow, efficiencies will be maintained by providing frequent upgrades of operating systems and hardware so that software issues related to older operating system conflicts are avoided. System expansion is also planned to further support providing fully independent systems at the new alternate energy control center (AECC).

Estimated Completion Date:
December 2012.

Status:
Rapid Restore interface is being planned, expected start during forth quarter 2008.

Funding ($000)

Forecast 2009	Forecast 2010	Forecast 2011	Forecast 2012	Forecast Total 2009 - 2012
500	1,000	400	400	2,300

System Operation – 2009 Capital

Project/Program Title	ECC - SOCCS Visualization
Status	December 2010
Estimated Service Date	2010

Work Description:
Using the digital replication of the Bulk Power System used on the new Energy Management System (EMS) new tools will be developed to allow the operators to monitor and view specific details of the status of the power system from the macro down to the micro level at the click of a button. Information from various operations and corporate systems will be made available so that the operators will have access to this information from one display. Through means of multi-tasking windows, desired information from different sources can be displayed simultaneously.

Justification:
The Bulk Power System includes the electric transmission and generation system and covers a wide geographical area and is interconnected to other service territories. Extensive computer systems supported by advanced applications and continuous streams of remote data provide the operators with the information needed to perform their job. In addition to this, there is information available from other operations and corporate systems. Data from sources such as the Electric Power Research Institute (EPRI) Phasor initiative and our Probability Risk Analysis (PRA) initiative will be evaluated as potential enhancements to our visualization effort to enable the operators to better visualize valuable information. Bringing information from various sources into one system, will improve user productivity and effectiveness.

Estimated Completion Date:
December 2010.

Funding ($000)

Forecast 2009	Forecast 2010	Forecast 2011	Forecast 2012	Forecast Total 2009 - 2012
500	500	-	-	1,000

CONSOLIDATED EDISON COMPANY OF NEW YORK, INC.
CAPITAL AND O&M
ADVANCED TECHNOLOGY
ELECTRIC OPERATIONS

DESCRIPTION	Page #
Reference Electric Operations - Capital - IIP- 6	
Distribution Simulator	2
Secondary Visualization Model	3
Secondary Monitoring (Secondary Model Validation)	5
Distribution Engineering Workstation (DEW)	6
Pole Attachment Project	8
Grid Optimization	9
Integrated System Model (ISM)	10
Decision Aids	12
Area Profile System	14
Joint Pole Use Software	16
Energy Efficiency IT Systems Development	17
High Tension Monitoring Data Acquisition System	18
Meter Shop ADAMS	19
Integrated Route Sheet (Work Management)	21
Transformer Asset Management	22
4kV Load Shedding System	23
ATS Automation	24
Power Quality (PQNodes) System Upgrade	25
SCADA Systems Consolidation	28
Electric Distribution Control Center Upgrades	30
Mapping System Upgrades	32

Electric Operations - 2009 Capital

Project/Program Title	Distribution Simulator
Status	
Estimated Service Date	2012

Work Description:
Electric Operations manages the electric distribution system via four Regional Distribution Control Centers. Operators in these control centers oversee the status and operation of the electric distribution system, with particular attention to items such as: monitoring loading on feeders and equipment; real time operating status of equipment; switching operations on distribution feeders; customer impact due to equipment out of service; service restoration of affected customers; and readiness for next-worse-case scenarios.

It is proposed that a 'phase zero' study be undertaken to develop the requirements for and determine the scope of a Distribution Simulator to mimic the full distribution system, perform system analysis and develop the analytical skills required to operate and manage the electric distribution system. This requirements analysis will review the computational platforms, graphic interfaces and supporting software currently in place and those planned such as enhanced modeling, loadflow models, and versatile work stations.

Justification:
Technological enhancements to computer systems and applications used to manage and operate electric distribution systems are moving forward at a rapid pace. Control center operators and field operators are changing jobs at an increased rate. This, combined with the attrition of experienced operators has accentuated the need for greatly enhanced training tools.

The training simulator environment for Control Center Operators will provide them with state-of-the-art distribution operations experience in a condensed time-frame and in a controlled manner.

A phase zero study is proposed to analyze the many equipment control systems, electric system models, and Control Center processes and procedures that will need to be duplicated to create a full distribution system simulator. In addition, the study would encompass the numerous IT systems that may need to be modified, and create a development timeline and engineering scope cost estimate.

Estimated Completion Date:
2012
Planning and Budgeting:

Status:

Funding ($000)

Forecast 2008	Forecast 2009	Forecast 2010	Forecast 2012	Forecast Total
-	-	-	2,000	2,000

Electric Operations - 2009 Capital

Project/Program Title	Secondary Visualization Modeling
Status	
Estimated Service Date	2012

Work Description:
The Secondary Visualization Modeling project entails the development and operation of distributed secondary network load flow models using Poly Voltage Load Flow (PVL) software. The scope includes implementation of a new five step standardized process that has been developed in order to create distributed secondary models for all the networks. In a distributed secondary model the load is connected at the service points across the network secondary distribution grid. There are over 500,000 service points across the distribution system. The new five step process ensures that the secondary models accurately represent the network secondary configuration for an accurate secondary load flow analysis. The first step requires that all existing secondary mapping data connectivity is established and verified. There is 94,000 miles of underground cable across the distribution system. Mapping system contains electric structure information required to develop secondary models. There is The PVL model requires impedance of the secondary cable which is based on engineering cable specifications. The second step includes the assignment of the correct and complete cable specification for every secondary main is included in the database. The underground distribution system has hundreds of different types of cable and sizes. Upon completion of the first two steps, the third step requires data necessary to build the PVL secondary model of the network is extracted into PVL. In the fourth step of the five step process the Secondary Demand Estimation (SDE) tool within PVL automatically distributes the individual customer's demand at their service points. Distributing the load at the service point assures a greater accuracy of the secondary load flow in the secondary mains. SDE uses billing data to automatically distribute demands to service points and develop coincident peak summer demand by customer. The last step of the five step process involves equalizing the customer demands to coincide with the transformer load using an iterative process. The step is automatic and modifies customer estimated demands to reduce the error between the calculated transformer flows (from PVL) and the measured transformer flows (from RMS). The objective of the reconciliation program is to adjust the customer demands at each service point to reduce the differences between the PVL calculated transformer flows and the measured RMS transformer flows. The program adjusts the service point demands (in kVA) calculated by the Service Demand Estimator program (SDE) determined from customer billing data utilizing the telemetry loads measured by the Remote Monitoring System (RMS) at each network transformer.
In addition we are developing enhanced visualization tools for the operators that shall overlap the real time field reported data against the operating model load flow results to minimize outage response times and prevent cascading grid failures.

Justification:
This project has been initiated in response to the PSC Order.
The present modeling technique of the network loads in PVL result in limitations to the secondary load flow analysis. The Poly Voltage Load Flow (PVL) connects the load extracted from the Remote Monitoring System (RMS) at the transformer low voltage bus for the distributed network. This method is not an accurate representation since the loads on the secondary grid are distributed and not concentrated in one point at the transformer location. The secondary load flow in the current modeling technique connects all network transformer primary buses to the swing

bus at the substation. Therefore, all transformer primary buses have the same primary voltage. This assumption does not take into account the primary feeder cable impedance and loadings and alters the model connectivity. All incremental changes to the secondary maps are not reflected in the existing models thereby resulting in a divergence between the secondary load flow analysis and the network secondary configuration. In order to address the limitations of the existing secondary load flow analysis the load has to be distributed on the secondary (low voltage) grid at the service points and reconciled with the load at the transformers. To begin our effort, we explored all the issues and have developed a five step standardized process in order to develop the new distributed secondary models.

Estimated Completion Date:
December 2012

Status:
Ongoing

Funding ($000)

Forecast 2009	Forecast 2010	Forecast 2011	Forecast 2012	Forecast Total 2009 - 2012
4,250	2,553	2,553	1,160	10,516

Electric Operations - 2009 Capital

Project/Program Title	Secondary Monitoring (Secondary Model Validation)
Status	R&D
Estimated Service Date	2013

Work Description:
The µRTU Secondary Monitoring project shall provide near real time secondary grid load flows. The secondary grid load flows from strategic locations within the network shall be used to validate the distributed secondary load flow models. A new technology based on a µRTU Secondary Monitoring device shall be installed strategically in some of our underground networks over the next five years to provide near real time data information from the secondary mains. The communication technology relies on using RF communication from existing providers. The goal is to install 3,500 Secondary Monitoring µRTU's in various networks across the distribution system over the next give years and use the data to validate the distributed secondary network models

Justification:
This project has been initiated in response to the PSC Order.

The distributed secondary models use statistical models to calculate 24 hour demand profiles for all the service points within the secondary grid. Near real time measurements from the secondary grid shall enhance these models with a statistical sampling of strategic locations. The secondary monitoring data shall provide a better estimate of customer coincident demand during peak summer days. The validated secondary models shall provide both planning and real time applications through improved secondary network loading calculations and identification of portions of the secondary network that are out of service or faulted. The approach will use identification and assessment of inconsistencies between secondary model load flow simulation results and near real time secondary monitoring data. The validated secondary models shall be used to estimate the loading at each network transformer as a function of time and temperature variable. The predicted loading values at network transformers shall be continuously evaluated against real time data. Any significant differences between the transformer loading estimates and the actual transformer loading values obtained from the network transformer monitoring system shall be identified and used as the basis to try and identify possible causes of the differences such as open mains and blown limiters.

Estimated Completion Date:
December 2013

Status:
R&D

Funding ($000)

Forecast 2009	Forecast 2010	Forecast 2011	Forecast 2012	Forecast Total 2009 - 2012
4,000	4,000	6,000	6,000	20,000

Electric Operations - 2009 Capital

Project/Program Title	Distribution Engineering Workstation (DEW)
Status	
Estimated Service Date	

Work Description:
The Company will be utilizing new circuit analysis software called Distribution Engineering Workstation ("DEW"). This software was initially developed through the Electric Power Research Institute ("EPRI") as a classical engineering analysis tool. However, over the past few years, the Company has been working with its initial designer (i.e., Electrical Distribution Design) to further develop and substantially enhance the functionality of DEW as part of an initiative that will integrate this circuit analysis software into many of the Company's other mission critical systems. It will become a key tool for enhanced distribution engineering planning and analysis, as well as for real-time control center operations. This model will serve as the foundation of the "Smart Grid of the Future" Con Edison system.

The first stage of this project integrates DEW into the necessary Con Edison systems. Software and interfaces are being developed that allow for the creation and automatic update of an electrical system model using various types of Con Edison mapping systems. Using historical load research data, customer load statistics and load profiles have been created for use in the DEW models. Automated extract of monthly Kwh billing data from the Company's customers is also planned.

The second stage of this project is building the Company's circuits within DEW. In 2007, Staten Island and the Manhattan Sutton Network were manually built in DEW. In 2008, development has begun on a circuit builder that will automatically extract the data from the Company's mapping and data systems, converting it into a working DEW model. The Pennsylvania, Fashion, and Hudson Yards networks will be built in 2008 to validate the circuit builder. In the following years, the remaining networks in Manhattan will be built and a circuit builder that integrates with the Brooklyn Queens and Westchester mapping systems will be developed.

The third stage of this project is the development of a real time "virtual" supervisory control system. This stage provides for integration of DEW with the Company's various data acquisition ("SCADA") systems. Real time values of substation voltages and currents, switch information, power quality data, etc., will be used by DEW to determine calculated loads and voltages on the entire distribution system. These calculated loads and voltages comprise the "virtual" supervisory control system and will enable DEW to be used as a powerful control center operating tool.

Justification:
The DEW system model will serve as the plant model for the Company's electrical system, allowing a lean management approach to engineering, operations, and planning. The DEW software integrates the transmission, distribution, and customer into one model, allowing more accurate analysis than the current segregated models the Company uses. Using a single, integrated model, will also aid contingency and reliability analysis and allow the same model that is used for engineering analysis and planning to be used for control center operations.

DEW integrates load statistics derived from historical data, including customer usages and weather patterns, for use in forecasting. This will allow the Company to better plan how many crews it needs available based on weather and system load, increasing the efficiency of our emergency response.

Additionally, the real time "virtual" supervisory control system in DEW will allow the Company to better monitor customer voltage and current, improving service. Detecting problems at the customer level, such as low or varying voltage, will be expedited so that the Company can respond more quickly. Also, the Company will be better able to observe changes within the system that may warn of future problems, and can respond to situations before any actual problems occur.

The DEW model also provides a platform for integrating machine learning into the Company's system analysis and emergency response procedures. Machine Learning is an adaptive dynamic programming that couples a system model and existing information to create intelligence that optimizes the system in the face of uncertain outside conditions. Concurrent with the DEW project, the Company is working with Columbia University to research the development of mathematical algorithms that use statistics and historical data derived from the Company's information systems to link specific system characteristics with resulting events. The result will allow greater system automation and will improve control center operations.

Estimated Completion Date:
2012

Status:
In 2007, we worked with EDD to manually built DEW models of Staten Island and of the Sutton Network in Manhattan. These models are currently being validated. A DEW circuit builder is under development to automate the modeling process. Interfaces between the various Con Edison information systems and the new DEW circuit builder for EDFIS and Vision are also in development in 2008. In 2008, three more Manhattan network models will be built: Pennsylvania Network, Fashion Network, and the Hudson Yards Network.

Funding ($000)

Forecast 2009	Forecast 2010	Forecast 2011	Forecast 2012	Forecast Total 2009 - 2012
2,500	2,500	2,500	2,500	10,000

Electric Operations - 2009 Capital

Project/Program Title	Pole Attachment Project
Status	
Estimated Service Date	

Work Description:
To comply with the PSC Pole Attachment Proceeding, the Company implemented a plan to address the items in the Commission Order. The plan focuses on business processes, reconciliation of pole and third party attachment records and IT systems development. The IT systems component involves the development of a number of centralized systems, including a pole asset master database, a third party attachment database and a third party work management system. The office and field component involves data identification and reconciliation of records.

Justification:
In August 2004, after a two-year "collaborative" proceeding, the Public Service Commission issued an Order in case 03-M-0432 concerning third party attachments on distribution poles. The Order required the following items to be put into place:

- Within three (3) years of the order (August 2007), Pole Owners and attachers must either reconcile all attachments through an audit or stipulate to the number of third party pole attachments for each CATV Company. There is a one year extension to August 2008 for all parties even though CE stipulated to our existing company records in August 2007, however we do not have agreement yet from the other third parties or Verizon (JU owner). We anticipate working with all of the parties to reconcile ownership and attachment records for all poles and to complete that reconciliation by end of 2010.
- All Pole Owners must now meet Commission ordered time lines for pole attachments and conduit make ready work.
- Pole Owners must develop procedures for tracking and recording third party attachments. Billing information for pole attachments (rentals) must be tracked in a database. Of note, the Commission specifically stated that "the ultimate responsibility is on the utility to prove an amount is owed."
- Develop the procedures to manage the pole attachment make-ready work process and database

Estimated Completion Date:
December 2010

Status:

Funding ($000)

Forecast 2009	Forecast 2010	Forecast 2011	Forecast 2012	Forecast Total 2009 - 2012
1,400	1,400	-	-	2,800

Electric Operations - 2009 Capital

Project/Program Title	Grid Optimization
Status	
Estimated Service Date	2011

Work Description:
Reinforcement of the electric grid requires optimal deployment of electrical assets to meet peak electric demand. This project will seek to optimize the reinforcement of the electric grid by implementing software applications to support both the efficient reinforcement of electric cable, switches and distributed resources on the system as well as potentially measure and enable curtailable load. Software controllers will be deployed to enable efficient utilization of the electric grid through asset allocation and placement as well as enable curtailable load that can respond to system emergencies on the grid. The software will model usage patterns and create a baseline of data collection such as time, date, load curtail device, etc. and model expected behavior of switches and appliances that could be used to optimize the electric grid. The deployed software will also prove out incentive based pricing to drive towards optimized energy usage with customer utility.

In addition, software will be deployed to create efficient control signals that would enable efficient autonomous operations of switches, distributed generation, and appliances based on a developed pricing mechanism. In particular load management software will be deployed in buildings and Metropolitan Transit Authority (MTA) facilities using software controllers that use real option analysis where uncertainty inherent in investment projects can be accounted for by risk-adjusting probabilities and thereby reduce load during peak.

Justification:
The deployment and reinforcement of electrical assets for the delivery of electricity is based on peak load on the system and peak load at the specific load regions. The dynamic operation of electrical distribution equipment, like SF6 switches, and the signaling of curtailable load or distributed generation to create elasticity in demand within a confined load region requires efficient communication and transaction capabilities where these load modifiers can autonomously act on signals without operator intervention. Through elasticity in demand, peak load requirements can be managed on a real time basis both under normal and emergency conditions. In addition, planning of new electrical infrastructure and associated reinforcements can be more efficiently deployed where needed, given this elasticity. Software controllers located at various generation and load devices coupled with transactional software can create the opportunity of optimizing the electric grid's reliability and efficiency and reduce the costs in providing electric service.

Estimated Completion Date:

Status:

Funding ($000)

Forecast 2009	Forecast 2010	Forecast 2011	Forecast 2012	Forecast Total 2009 - 2012
900	900	900	-	2,700

Electric Operations - 2009 Capital

Project/Program Title	Integrated System Model (ISM)
Status	
Estimated Service Date	2011

Work Description:
An Integrated System Model (ISM) is being constructed that will eventually cover the entire Con Edison system. Intelligent algorithms, machine and reinforcement learning will provide decision support for evaluation of operations and planning designs and procedures.

The ISM software will merge this smart computer system with the traditional power flow and reliability analyses currently being done, but it will use modern computational technologies to make it faster, cheaper, more efficient and user friendly. Advanced control and protection schemes can then be quickly and efficiently tested. Component loading information, together with thermal and voltage constraints will be used to determine optimization strategies and decision support.

An academic institute has developed prototype intelligent software for the Manhattan Electric Control Center (MECC). Stand alone software has been delivered for ranking feeder susceptibility-to-impending-failure, and a similar prediction system is being prepared for transformers, feeder sections and joints, and secondary mains and manhole events. These and additional methodologies will be integrated with power flow and customer load aggregation to produce the Integrated System Model.

The Integrated System Model software manages hundreds of distribution attributes that describe the present and past condition of the major components of the electrical system and passes them through a proprietary Machine Learning Software Engine. Failure models are developed that are used to design new alternatives for dynamic performance of the system. Weather variability, feeder restoration, switching options, load movement, and distributed resource locations and magnitudes can all be varied in the Integrated System Model to produce optimal design and operations support.

Justification:
The optimization of reinforcement and replacement programs is of highest priority for regional distribution engineering as analysis of the performance of the electrical distribution system is carried out. New, modern software is needed to ensure that distribution devices and services are adequate to meet both current peak load conditions and forecast load growth. Customer consumption patterns must be linked to distribution and transmission decisions so that system improvements can be adequately planned and carried out. Software is required to link power flow analyses with controllers that model condition-based uncertainty, component performance metrics, failure models, jeopardy analyses, and system conditions at all times.

Manhattan regional engineering currently uses several stand-alone analysis packages for these tasks. WOLF and PVA power flow software is very reliable, but it does not converge to the accuracies required for optimal reinforcement decisions under variable load conditions. Jeopardy is a stochastic evaluation system that takes into account likelihoods of failure to rank networks most at risk for cascading failures. The two software systems must each be set up independently for new configurations of each network by hand. Customer information is being aggregated by CufLink to associate load from transformers with the CIS (Customer Information System). This currently laborious task must be streamlined and provided for every network and major customer.

Electric Operations - 2009 Capital

Next generation modernization of the electric networks requires fast and automated simulation and machine learning to determine how new configurations will behave under the full range of conditions the system will see in the future. Designers will need to quickly and painlessly explore scenarios dealing with abnormal conditions and extreme contingencies.

Current reliability is based on massive redundancy. In order to reduce capital costs, future designs must achieve that reliability through computer intelligence and active control algorithms that support designer and controller decisions.

Estimated Completion Date:
2011

Status:

Funding ($000)

Forecast 2009	Forecast 2010	Forecast 2011	Forecast 2012	Forecast Total 2009 - 2012
1,750	1,750	1,750	-	5,250

Electric Operations - 2009 Capital

Project/Program Title	Decision Aids
Status	
Estimated Service Date	2011

Work Description:
This project will be lead by the Operational Management team of the Edison Program and the key representatives from the Regional Control Centers and Energy Control Centers. From the collective operational experiences of our operators and lessons learned from past incidents like LIC, this project's goal is to develop a Decision Support System (DSS). The battlefield visualization system for making existing data and algorithms available to operators in an integrated view is just one example of the interactive approach that is being taken to creating these tools.
The goal for the DSS is to use rigorous enforcement of feedback loops that first predict outcomes and then make corrections based upon objective scoring of the predictions versus actual events.

- The DSS will use Machine Learning, which will track performance of the electric system daily, analyzing failures as they happen and re-ranking feeder susceptibility to impending failure every 20 minutes. The DSS will also report the 6 most likely attributes that contribute to the risk of failure.
- DSS will use Machine Learning – with information from 2 different live sources – continuously running WOLF in Manhattan and VDAMS in Brooklyn Queens to predict feeders and transformers susceptible to failure in the control centers this summer.
- The DSS will provide real-time variances for transformers, nearby transformers, the feeders and their banded feeders. This will be available to operators and staff at the Regional Control Centers and their regional engineering groups to help preempt failures and aid as a preventative tool in their response to contingencies as they unfold. A team combining of scientists and ConEd engineer/operator will be staffing a desk in the control centers – where these analyses will be made available during weekday peak load times.
- The DSS will predict load, specific to each transformer, 12 hours in advance, and prioritize switch closures, provide cooling strategies and recommend possible de-loading to regional engineering and Operations. The DSS will then track the actions taken by Operations and record the system response to those actions.

Justification:
The purpose of this Decision Aids support project for the Edison Program is to enable operational innovation through development and deployment of adaptive business intelligence software. CALM (Computer Aided Lean Management) is a methodology for running a business based on the common sense approach of measuring the results of actions taken and using those measurements to design new processes that drive out inefficiencies and reduce risks. This corporate-wide transformational initiative also enhances customer service and reliability, and increases the assurance that new system designs will be effective when introduced to the electric grid.

The program is a collaborative effort among Con Edison, Inc. ("CEI"), and academic institutes that uses Machine Learning ("ML") – Adaptive dynamic programming that couples to the Con Edison electrical models and to existing information to create intelligence that optimizes the business in this uncertain world.

Estimated Completion Date:
2011

Electric Operations - 2009 Capital

Status:

Funding ($000)

Forecast 2009	Forecast 2010	Forecast 2011	Forecast 2012	Forecast Total 2009 - 2012
1,500	1,500	1,500	-	4,500

Electric Operations - 2009 Capital

Project/Program Title	Area Profile System
Status	
Estimated Service Date	2008

Work Description:
A new mapping system known as the Area Profile System (APS - Phase 1 and Phase 2) was completed within the Energy Efficiency Programs Department. Essentially APS is built on a MapInfo platform, incorporates US Census data, CIS account information, New York City Department of buildings, Dun and Bradstreet Business Information and engineering connectivity (feeders, services, M&S plates) information from Cuflink. APS permits users to develop population/household estimates down to the census tract, block group and block levels.

APS remains a work in progress and requires additional development phases, assessment, integration, engineering connectivity portals. APS is sourced from CIS and Cuflink and number of external databases and requires regular maintenance and support in terms of data refreshment (CIS, Cuflink, EMOPSYS, NYC Department of Buildings, Census Updates, other public and proprietary data bases) and hosting.

Justification:

APS is essential (as set forth in the Plans and Milestones for NYSPSC Staff Priority Recommendations) in order to identify population and household information down to the requested geographic level (zip code, block group, M&S Plate, etc) in consonance with CECONY account information. Without APS, the Company will not have in-house application to systematically collect, assess and evaluate critical population and household impact during a contingency or system emergency.

Since its inception in June, 2007, APS has been employed during CERC events and is a key system in the Command Center. Information and statistics extracted from APS support other systems in providing key customer data, population, households/employment by M/S plate, census tract, census block, zip code, etc. Demand response customer information is fully loaded which supports callable load activities during contingencies and system emergencies.

APS Phase 2 was completed in the February, 2008 and offers greater functionality including: easier viewing, better customer identification, increased data export capability. APS data migrated from MapInfo tables to a SQL server database. The transitioned to SQL offers better organization and maximizes system operation, updates and flexibility. In addition, APS Phase 2 includes the entire NYC Department of Buildings database and the Dun and Bradstreet business information system or 350,000 businesses domiciled in NYC and Westchester County.

APS Phase 3 which is now in progress will provide for the integration of CECONY account data, New York City Department of Buildings and Dun and Bradstreet business information with NYC/Westchester County Block/Lot information. Phase 3 should also provide clearer selection boundaries, a custom point selection tools, and advanced selection/query capability. Overall, information will be available at the building level which offers essential data when assessing emergency situations, isolating customers (including behind the meter customer data) and building marketing support for energy efficiency/demand response program development and execution.

Electric Operations - 2009 Capital

For the forecast period in question, approximately $100,000/year (Capital) will be allocated to enhance APS functionality, purchase additional hardware/software, contract for programming to establish higher level searches, compile/integrate additional databases, ease user operation/interface and expand viewing features.

In addition, approximately $100,000/year (O&M) will be allocated to continue all required licenses, enlist technical support/product maintenance, conduct ongoing/future training efforts, and internal labor to manage, operate and upload/integrate internal data/external information.

Estimated Completion Date:
December 2012

Funding ($000):

Capital

Forecast 2009	Forecast 2010	Forecast 2011	Forecast 2012	Forecast Total
100	100	100	100	400

Electric Operations - 2009 Capital

Project/Program Title	Joint Pole Use Software
Status	
Estimated Service Date	

Work Description:
Provide capital funding for the design and enhancement of the canned InQuest software to use present and future Con Edison (CE) system data to better communicate and coordinate Joint Use Pole transactions between CE and Verizon, Third Party Attachers and Municipalities as per our 1982 Joint Use Agreement stipulations and PSC Double Wood reduction mandate.

Justification:
To improve the joint use notification and pole ownership tracking as per our 1982 Joint Use Agreement contract between Verizon and Con Edison. Savings of $10.2M would more then offset the estimated $450k cost to make the existing software compatible with existing CE data. Ongoing licensing costs estimated at <$100k annually needs to be determined capital or O&M which is not included in the above $450k design costs. We anticipate needing to enhance the canned software product on an ongoing basis and require the original $450k for 2008, $450k in 2009 and $450k for 2010. We anticipate that 2009 and 2010 fudning due to working with the other pole owner Verizon and all of the third party pole attachers to fill all of our needs for the software to communicate between all parties, including municipalities and our and Verizon internal systems (i.e. E-trac, ProjectWise Layout Tracking, PATs, Billing, Permits system, etc.).

Will be used to keep track of our overhead real estate to maintain proper ownership records and tracking between all of the joint users of the poles, including municipal requirements.

Estimated Completion Date:

Phase I basic working system December 2008
Phase II Connections to other Verizon and CE systems December 2009
Phase III Total Enhancement & Final Completion of Project December 2010

Status:

Funding ($000)

Forecast 2009	Forecast 2010	Forecast 2011	Forecast 2012	Forecast Total 2009 - 2012
450	450	-	-	900

Electric Operations - 2009 Capital

Project/Program Title	Energy Efficiency IT Systems Development
Status	Under development
Estimated Service Date	Ongoing through 2011

Work Description:
Development and implementation of a web based Energy Efficiency Management System (EEMS). The system will interface with the Customer Service System (CSS), external data sources and the Area Profile System (APS) to extract leads and monitor completed measures for Energy Efficiency programs. The system will provide data access to desktop applications and analytical software. Sales leads will be routed to the appropriate Sales area and tracked through completion, validation, payment, and performance reporting. System development will also be undertaken for audit, reporting and tracking procedures. External off the shelf license and maintenance will be sourced and purchased/leased

Justification:
EEMS is essential to manage a multitude of Energy Efficiency programs. The system is required to integrate CSS, Emergency Operations (EMOPSYS), APS information as well as information from external sources. This program will be used by Sales, Auditing, Program Administration, and Vendors. It will produce and manage energy efficiency leads from lead generation through the verification, payment, and performance reporting.

Estimated Completion Date:
Ongoing through 2011

Status:
Initial review underway

Funding ($000)

Forecast 2009	Forecast 2010	Forecast 2011	Forecast 2012	Forecast Total
2,184	1,184	1,184	784	5,336

Electric Operations - 2009 Capital

Project/Program Title	High Tension Monitoring Data Acquisition System (HTMDAS)
Status	
Estimated Service Date	2013

Work Description:
To upgrade the existing meters associated with the 1400 High Tension (HT) feeders on the system, with a RF communication interface card and module that will support real time data acquisition at a rate similar to other systems currently in use.

Justification:
HTMDAS will be used to improve the current load flow modeling of network feeders supplying High Tension load. In addition, to providing up-to-date load flow data, better load forecasting, support remote metering of HT customers, and provide critical load data during contingency situations. This shall significantly improve the reliability and operation of the distribution network by enhancing the accuracy of various load flow analysis tools.

Estimated Completion Date:
December, 2013

Status:
R&D

Funding ($000)

Forecast 2009	Forecast 2010	Forecast 2011	Forecast 2012	Forecast Total 2009 - 2012
730	730	730	730	2,920

Electric Operations - 2009 Capital

Project/Program Title	Meter Shop ADAMS
Status	Ongoing
Estimated Service Date	

Work Description:
In order to comply with the New York State PSC ruling that requires utilities maintain records of the test accuracy and location of all electric meters used for revenue services, as stated in 16 NYCRR Part 92, Con Edison created the Automatic Data Acquisition – Meter Shop (ADAMS) application. ADAMS is an IMS based application, developed in the early 1980's, that tracks the shop processes and meter location and test accuracy. This project is to replace ADAMS in order to provide a system that can be modified as additional functionality is required or in response to changing regulatory requirements.

Justification:
ADAMS is a corporate application used by various organizations. In addition to the Meter Shop, ADAMS is used by Central Field Services storerooms, Meter & Test groups, and Customer Service areas to receive and ship pallets of meters, consign meters to individuals performing installations, to resolve location and prefix issues that affect billing, and to enter results of accuracy tests performed in the field. As the technology of metering devices and as regulations change, the effectiveness of ADAMS to support the Meter Shop has diminished. Even with creation of various programs to address some of the deficiencies of the system and improve its usefulness, ADAMS remains inflexible and difficult to modify to suit current and future requirements. The replacement of ADAMS will provide a system that can be modified as additional functionality is required or in response to changing regulatory requirements. Additionally, moving ADAMS to a more modern platform will allow better system support as computer hardware and software continue to evolve. The implementation of a new meter management system will serve the needs of Electric and Gas ADAMS, thereby reducing the cost of implementation and support. In evaluating the viability of an investment to replace ADAMS, it is important to consider that tracking of metering devices is not only required by law, but is also critical to the corporation. ADAMS helps to keep the metering infrastructure under control by tracking the location of individual meters and providing a mechanism to identify those portions of the population that could be experiencing performance issues. As our present system ages, it is becoming increasingly difficult to perform some of the queries, such as identifying the location of specific meter functions, types, and vintages, that enables us to manage our meter population. The investment in a replacement for ADAMS will provide the level of functionality and a modern database design that will allow us to effectively manage the meter population for the foreseeable future. This replacement must be considered as a strategic investment that is essential for our success rather than a cost saving investment.

Estimated Completion Date:

Status:
Ongoing

Electric Operations - 2009 Capital

Funding ($000)

Forecast 2009	Forecast 2010	Forecast 2011	Forecast 2012	Forecast Total 2009 - 2012
1,250	-	-	-	1,250

Electric Operations - 2009 Capital

Project/Program Title	Integrated Route Sheet
Status	Ongoing
Estimated Service Date	

Work Description:
This project establishes a new field work management and reporting tool, for use with the newly deployed "Toughbook" computers, that will integrate the existing corporate systems, such as e-Trac, Electric Distribution Inspection System (EDIS), Mapping databases (layouts) and a host of legacy systems such as Human Resources / Payroll, Finance, Materials Management, Purchasing, and Property Records.

Justification:
Electric Operations uses several separate legacy systems to manage its construction, maintenance, inspection and repair work on the electric distribution system. Many of these systems do not have certain business functionalities, such as work and resource scheduling, which are needed to improve process efficiencies and workforce productivity. Additionally, they are difficult to retrieve information from and often require redundant data entry to remain synchronized. The major existing system is "DOCS" (Division Operations Control System), a legacy work measurement system that is mainframe based and over 20 years old. This effort will be to integrate the various reporting required thru one field reporting vehicle such as the development of this Integrated Route Sheet.

Estimated Completion Date:

Status:
Ongoing

Funding ($000)

Forecast 2009	Forecast 2010	Forecast 2011	Forecast 2012	Forecast Total 2009 - 2012
3,000	1,500	1,000	-	5,500

Electric Operations - 2009 Capital

Project/Program Title	Transformer Asset Management
Status	
Estimated Service Date	2010

Work Description:
In 2008, the EDIS deployment will be extended to replace the existing CINDE / Mainsaver inspection application, and migrate its historical data to EDIS. While this will establish a better platform for distribution transformer inspections, Electric Operations needs an environment in which it can view and analyze data for transformers throughout their life cycle. This requires an integration effort between the new Asset Master and existing systems which capture and/or analyze data associated with transformer assets.

Justification:
Distribution transformers are tracked from the time they are delivered by the manufacturer and placed in the Company's inventory. An asset record is established in DEMS with the manufacturer's serial number, rating and other salient attribute data. DEMS is also used to track the locations of transformers once they are installed in the field. Physical installation work is captured in eTrac. However, other systems are used to capture various asset data such as inspection, maintenance and repair history (CINDE), real-time status (RMS), dissolved gas in oil analysis (DGOA) and transformer overload monitoring (TOMS), in which the transformers are identified by the ID of the structure in which they are installed. This can change over the life of a transformer that may be removed for rehabilitation at the Astoria Transformer Shop, and later returned to service in another location. Updating these multiple systems and maintaining their synchronicity is difficult. Retrieval of life-cycle data for engineering analysis is labor intense and prone to error.

Estimated Completion Date:
December 2010

Status:

Funding ($000)

Forecast 2009	Forecast 2010	Forecast 2011	Forecast 2012	Forecast Total 2009 - 2012
3,000	2,000	-	-	5,000

Electric Operations - 2009 Capital

Project/Program Title	4 kV Load Shedding
Status	In Progress
Estimated Service Date	2011

Work Description:
There are 240 – 4kV Unit Substations on the Con Edison System. Thirteen are completed, therefore 227 still need to be certified. Work is proceeding on these stations and certifications will begin during the Spring, 2008. It is projected that all stations will be completed by 12/31/11.

Justification:
The 4kV Load Shedding was appropriated in March, 2003 to comply with the NERC/ISO Load Shedding and Restoration requirements. Work began and the GE XA-21 system was procured to provide the capability to shed load. The 4kV Jamaica Network is 75% complete. Thirteen of seventeen stations have been certified.

Estimated Completion Date:
2011

Status:

Funding ($000)

Forecast 2009	Forecast 2010	Forecast 2011	Forecast 2012	Forecast Total 2009 - 2012
450	600	450	-	1,500

Electric Operations - 2009 Capital

Project/Program Title	ATS Automation
Status	Ongoing
Estimated Service Date	2011

Work Description:
This project is to provide supervisory control of Automatic Transfer Switches supplying 4kV unit substations.
Currently, there are 32 Automatic Transfer Switches (ATS) located on the primary side of unit substations that are fed from two 13 kV feeders. The ATS provides means of keeping the 4kV substation transformer energized by switching to the alternate feeder when the main feeder is out of service.
Currently these ATS are not remotely monitored or controllable. The capabilities that could be provided remotely using the unit substation automation system are as follows:

- Position of the 101 and 102 switches,
- open/close (status),
- availability of normal and alternate primary system voltage (pt/fuse failure detection),
- Automatic/Manual Mode Selector Switch Position (alarm),
- Automatic Transfer Ready Indication (alarm).

The above information will give the control room operator sufficient information to identify the position of the two switches, which one is open and which one is closed. The information provided will also tell the operator if the primary system voltage is available on both the normal and alternate supplies using indicating lights. In addition, the control center will know if the ATS is ready for transfer and whether the ATS is set to the automatic transfer mode.

Justification:
During a recent event at one of our stations, the alternate Feeder's high side fuses were blown but since they were not monitored and the station is typically unmanned, this was unknown. Consequently, the main feeder tripped due to a fault however there was no alternate feeder to pick-up the load since its fuses were blown. If this ATS had been under remote supervision, this loss of potential condition of the alternate feeder would have been detected via an alarm and prevented the customer outage that ensued. Several benefits can be derived from monitoring the ATS and bringing the data back to the regional control centers: Avoid customer outages on our radial 4 kV substations, improve safety conditions in and around station when work is in progress providing the control center with real time system conditions, and provide the option of remote control of ATS for selected situations when it is convenient and safer to switch from a distance.

Estimated Completion Date:
2011

Status:
Hardware was procured and the preliminary field work was completed.

Funding ($000)

Forecast 2009	Forecast 2010	Forecast 2011	Forecast 2012	Forecast Total 2009 - 2012
150	100	100	-	350

Electric Operations - 2009 Capital

Project/Program Title	Power Quality (PQ) System Upgrade
Status	
Estimated Service Date	2010

Work Description:

- Replacement of the existing power quality nodes in forty six (46) substations with new DataNodes
- Installation of one more node (DataNode) on a second transformer in each station
- Enhancements of the reactance-to-fault (RTF) software / website
- Development of an interface between the monitoring data management / analysis system (PQView), and substation monitors (DataNodes)
- Server upgrade

Justification:

In 1993 Power Quality group started the installation of PQ monitors (PQNodes) at the network level, one monitor per network. In 1997 the group initiated another project, installation of PQNodes in substations. The last Node was installed in July 2006. The data collected from these 122 monitors became very important for our Con Edison system. Distribution, Relay Protection, PQ, Equipment Engineers, Customer Reps and technicians, are using the PQ data to confirm, check, and analyze events and trends.

In 2005 Distribution Engineering and the Power Quality group developed an application, **Reactance-To-Fault (RTF).** It uses power quality data collected from substations during feeder faults and automatically indicates a fault location, to reduce fault-locating time on the primary feeder system. PQView software together with PVL impedance data is used to assist our Control Centers personnel with fault locating. This program, initiated in Manhattan, has demonstrated the capability of narrowing the location of feeder faults by utilizing data from the existing PQNodes and calculating distances to the faults based upon the reactive impedances.

Fault locating consumes precious time, manpower and prolongs the feeder outage; any reduction in fault locating time is therefore extremely beneficial, especially during the summer months when feeder restoration is key for system reliability. The results from this effort have been very impressive. The project reduced fault-locating time during the summer months by more than one hour. RTF is an important tool for improving our company reliability.

For PQ data (RTF included) to be more reliable there are improvements to be made.

1. The PQNode is now obsolete. The manufacturer, Dranetz-BMI, designed and produced a new version, the DataNode, more powerful, with Ethernet communication that would offer faster, real-time data. Replacing the existing Nodes with the new DataNodes will be extremely beneficial to our system.
2. The original Power Quality Substation Project specified one PQNode per substation. So each substation has one Node monitoring one transformer. If that transformer has an outage, the Node can not provide any information on the network(s) fed from that station. Installing one more Node (DataNode) on a second transformer in each station will be very beneficial.
3. Further enhancements of the RTF software / website are required, to improve accuracy from a more detailed model, a refinement in the error range estimation, development of a graphical representation to ease operator interface, and development of an automated fault type/signature recognition feature.

4. The need for more timely monitoring data from the monitoring equipment has become very important. When the system is providing information such as fault location directly to operations, the information becomes very critical and it must be available as quickly as possible. New methods of interfacing with the actual monitoring equipment are needed. The new methods must be extremely reliable and they must be able to obtain the data immediately following disturbances or some other alarm condition. What's needed is an interface between the monitoring data management and analysis system (PQView), and substation monitors (DataNodes) that provide information for real time applications.
5. A server upgrade is required to handle and store the increased volume of data to be collected from the 200 PQ monitors

SOLUTION

There are 46 stations that have now PQNodes.

		Completion		
Region	**Substations**	**2008**	**2009**	**2010**
Bronx	Bruckner		yes	
-	East 179th Street		yes	
-	Hell Gate	Yes		
-	Parkchester #1			Yes
-	Parkchester #2			Yes
Brooklyn	Bensonhurst #1	Yes		
-	Bensonhurst #2	Yes		
-	Brownsville #1		yes	
-	Brownsville #2		yes	
-	Glendale	Yes		
-	Greenwood		yes	
-	Plymouth Street			Yes
-	Water Street			Yes
Manhattan	Avenue A	Yes		
-	Cherry Street	Yes		
-	East 29th Street	Yes		
-	East 36th Street	Yes		
-	East 40th Street #1	Yes		
-	East 40th Street #2	Yes		
-	East 63rd Street #1	Yes		
-	East 63rd Street #2	Yes		
-	East 75th Street		yes	
-	Leonard Street #1		yes	
-	Leonard Street #2		yes	
-	Murray Hill		yes	
-	Seaport # 1		yes	
-	Seaport # 2		yes	
-	Sherman Creek		yes	
-	Trade Center		yes	
-	West 110th Street #1			Yes

Region	Substations	2008	Completion 2009	2010
-	West 110th Street #2			Yes
-	West 19th Street			Yes
-	West 42nd Street #1			Yes
-	West 42nd Street #2			Yes
-	West 50th Street			Yes
-	West 65th Street #1			Yes
-	West 65th Street #2			Yes
Queens	Corona #1		yes	
-	Corona #2		yes	
-	Jamaica			Yes
-	North Queens	Yes		
Staten Island	Fox Hills	Yes		
-	Fresh Kills		yes	
Westchester	Grassland	Yes		
-	Ossining West		yes	
-	White Plains			Yes

We evaluate that the expansion project will be completed in three years.

The estimated total cost to replace the PQNodes with DataNodes and add another DataNode per station (equipment, drawing revision, labor, software) is $5,000,000.

Estimated Completion Date:
2010 – Year End

Status:

Funding ($000)

Forecast 2009	Forecast 2010	Forecast 2011	Forecast 2012	Forecast Total 2009 - 2012
1,650	1,650	-	-	3,300

Electric Operations - 2009 Capital

Project/Program Title	SCADA Systems Consolidation
Status	Ongoing
Estimated Service Date	2011

Work Description:
Consolidate the 3 different SCADA Systems into one integrated package. The consolidation will be accomplished in 3 phases.

Phase 1 – Load Shed - In this phase, Distribution Engineering will work with System Operations and vendors (GE) to implement 4kV Load shedding. GE will design screens for each of the 4kV unit substations required for their load shedding solution.

Phase 2 – Unit Substation Automation (USA) - The plan to move USA to the GE XA21 platform is expected to take 3 years. The first step is to assess the functionality currently provided by the current platform (G2) and determine how the GE XA21 platform will handle this functionality.

Phase 3 – Realflex -Moving from Realflex to the XA21 platform is expected to take 2 years. The reason we expect this to take less time than the USA migration is that the Realflex system uses GE technology to talk to the field equipment. The first step is to assess the functionality currently provided by Realflex and determine how the GE XA21 platform will handle this functionality.

Justification:
There are 3 different SCADA systems being used at Con Edison. Each of these systems requires separate hardware, configuration skills, maintenance and support. There are also 3 different user interfaces that operators need to learn and use. Currently there are 3 different SCADA Systems being used to monitor and control Con Edison's Electric Distribution System. These systems are SOCCS, USA, and Realflex.

The SOCCS system is used to control and monitor the High Voltage Distribution System. Recently, a new GE XA21 package solution was selected to replace the existing SOCCS system and comply with the 4kV load shedding requirements set by NERC/ISO.

The USA system provides SCADA functionality for the 4kV unit substations. Using USA Electric Control Center operators can monitor and control breakers at the unit substations and distribution engineers can view feeder and transformer data.

The Realflex system is used to monitor and control the overhead auto-loop system. Realflex provides the same functionality for the overhead system that the USA system provides for the 4kV unit substations.

The difference between these three systems lies in the data acquisition technologies used. And as mentioned above, the SOCCS system will use GE's XA21 platform. The USA system uses Gensym Corporation's G2 platform and the current Realfex implementation is based on GE's D200 platform.

Estimated Completion Date:
2011.

Electric Operations - 2009 Capital

Status:
Ongoing

Funding ($000)

Forecast 2009	Forecast 2010	Forecast 2011	Forecast 2012	Forecast Total 2009 - 2012
800	600	500	-	1,900

Electric Operations - 2009 Capital

Project/Program Title	Electric Distribution Control Center Upgrades
Status	
Estimated Service Date	2011

Work Description:
Each Electric Distribution Control Center is a 24 X 7 operation requiring the highest level of reliability and security. Their extensive use and dependency on the infrastructure and system architecture is vital to maintaining our ability to deliver safe and efficient services to our customers. IR is recommending a four (4) year plan to address the required systems architecture and communications network upgrades.

The first phase of the plan calls for rewriting VDAMS and migrating it to the most recent version of the VMS operating system on an HP Itanium platform. HP has announced that the Itanium platform is its next generation of chip set that will be supported into the 2020's. This platform includes changes in architecture, including increased use of "clustering" technology. The design will also take advantage of "virtual machine" technology, providing the ability to run several applications separately within a single server.

Additionally, all existing Alpha (Tru64 UNIX) hardware and HP software will be migrated. The core systems be migrated to take advantage of clustering, providing a seamless failover environment within and between control centers. This satisfies two distinct objectives: establishing a consolidated UNIX server environment, and providing the ability to automatically recover in the event of any server outage.

During the same period, a private network consisting advanced fiber technology called 'DWDM' will be installed. This design will provide the high speed network interconnects required to propagate the enormous amount of data across interconnected control centers.

The second phase would replace the existing UNIX architecture with the latest server technology, taking advantage of the new Itanium chip set. Included in this design will be a local 12-terabyte Storage Area Network ("SAN"). This SAN will store all data for the local control center and back up the data from all control centers, providing both disaster recovery and offsite data storage.

Justification:
The existing computing infrastructure was completed in 2001 and is approaching the end of its technology life span. Furthermore, HP has announced that by 2011, many of the components in the infrastructure will no longer be supported.

The unprecedented 9/11 disaster, and increases in sophisticated Cyber security attacks since, reinforce the need for additional security as well as an integrated control center to control center communication network. This would not only provide secure data transfers and an infrastructure for disaster recovery, but also "ZERO day" recovery, the ability to isolate the control centers from Cyber attacks on the corporate network while maintaining operating control over the electric distribution networks.

Among the critical systems that run in the control centers are the "core" engineering analysis systems, such as Auto-WOLF2 and Manual WOLF2, Visual WOLF2 and PVL. The hardware running these critical applications is also nearing the end of its useful life. Additionally, these are

currently "stand-alone" systems with a "warm" backup that requires a fully configured machine running live data and manual intervention to put it in production mode. A hardware reconfiguration would reduce the total number of servers dedicated to these systems, while leveraging the aforementioned new communications infrastructure.

Finally, the RMS data acquisition system requires a technology upgrade, as does the current method of storing and retrieving this critical data, especially from an historical perspective. Distribution Engineering requires that every scan from RMS be retained for analysis purposes, necessitating far more storage capacity than is currently in place.

The current data acquisition system, VDAMS, was introduced in the late 80's and further enhanced over the past 20 years. It has been patched and modified to address additional demands from the data it manages, well beyond its original intended design. Changes are increasingly difficult to make within reasonable time frames and the application is not as efficient in processing data as is currently demanded. VDAMS now contains are more then 350 modules outside of the base code, making it difficult to take advantage of the new technology being introduced with Digital Grid and ETI receivers in the area substations. The current request to incorporate Power Quality data acquisition functionality into the existing VDAMS environment would not only be expensive and resource intense, but would also take a great deal of time to implement.

The Electric Distribution Control Centers need to have their systems integrated and its infrastructure brought up to the latest technology in order to address these issues, be prepared to future demands, and continue to provide the highest level of support to Electric Control Center operations and Regional Engineering support.

Estimated Completion Date:
2011

Status:

Funding ($000)

Forecast 2009	Forecast 2010	Forecast 2011	Forecast 2012	Forecast Total 2009 - 2012
2,500	1,500	5,000	-	9,000

Electric Operations - 2009 Capital

Project/Program Title	Mapping Systems Upgrade
Status	
Estimated Service Date	2012

Work Description:
In parallel with similar efforts for gas and steam mapping systems, the Electric Operations mapping systems issues will be addressed over a 5-year period as follows:

Year 1 ($4.0 million)
- develop a detailed, step-by-step strategic plan with discrete timelines
- conduct thorough documentation of existing data models and landbases
- conduct thorough investigation of NYC and Westchester base map data
- conduct a detailed functional requirements analysis and develop a system specification
- evaluate vendor products and select a new mapping system platform
- develop common conceptual electric GIS data model
- develop technical specifications for data registration and migration
- evaluate data migration subcontractors and award contract(s)

Year 2 ($6.5 million)
- migrate and spatially reconcile data, establish new mapping environment for Brooklyn, including integration with engineering and operations models
- adopt the same process for Staten Island and commence system implementation
- adopt the same process for Queens and commence system implementation

Year 3 ($6.5 million)
- adopt the same process for Manhattan and commence system implementation
- adopt the same process for Bronx/ Westchester, and commence system implementation
- complete system implementation and integration efforts

Year 4 ($2 million)
- develop a detailed plan for conduit map data creation, registration and migration
- evaluate data migration subcontractors and award contract(s)
- begin data creation and registration for Manhattan and Brooklyn

Year 5 ($2 million)
- begin data creation and registration for Queens, Bronx and Westchester
- complete Manhattan and Brooklyn and migrate data to common electric model
- complete Queens, Bronx and Westchester and migrate data to common electric model

Note: Years 4 and 5 costs are capital components of the envisioned conduit map project – depending on the extent of manual conversion work, there may be a significant associated O&M expense

Justification:
The Company operates and maintains six corporate mapping applications in support of its electric, gas and steam distribution systems. Significant business benefits can be realized by migrating to a single automated mapping / facilities management environment, with a single data model, and in giving the Company's facilities data a spatially accurate orientation. To the greatest extent possible, a new system would provide, either inherently or via extended

applications, the functional capabilities of map viewing, plotting, specialty mapping, engineering design and system modeling that are in use in the existing environment.

Since the mapping systems were originally developed, Con Edison has undergone significant structural and organizational changes in response to the need to control costs. Operating groups centralized core functions and merged geographic areas in electric and gas distribution. For example, Bronx and Westchester Electric Operations were combined, as were Brooklyn and Queens. In the process, electric control centers were reduced from six to four. Similar consolidations were implemented in regional engineering organizations, where the use of multiple mapping applications becomes problematic. Gas Operations merged Bronx and Westchester operating groups, and those in Manhattan and Queens. Its gas control centers and engineering groups were reduced from four to one.

While operations across the regions have not yet been combined, there is potential benefit in having system platforms in place that facilitate future merger and acquisition activities. Especially in Electric Operations, reducing the number of mapping systems would have a favorable impact on operating and maintenance costs. Updating and maintaining multiple land bases and map products in a consolidated set of applications would be more efficient and provide the Company with more timely system updates. Furthermore, integration with the engineering and operations models, as well as other systems, would be greatly simplified and would better support corporate asset management and work management objectives.

The Company's mapping systems include VISION (Intergraph FRAMME-based applications in support of all gas and all electric secondary facilities), Feeder Mapping System (separate non-FRAMME application for electric primary – feeders), Electric Distribution Facilities Information System (application developed for Staten Island electric primary, secondary and C&DO maps), Intelligent Database Mapping System (maintains Brooklyn's electric primary, secondary and C&DO maps), Steam Operations Mapping Information System (for the entire steam distribution system), and Electric Transmission (AutoCAD). With the exception of the IDMS system in Brooklyn that is exclusively Oracle, all Con Edison's mapping systems use Bentley Microstation as the graphics engine, although other, ancillary data is stored in AutoCAD (e.g., Electric Transmission).

In addition to internal grounds for looking towards a more consolidated mapping environment, changes in the direction of the present Intergraph FRAMME technology are making the need to investigate other options a high priority. Because of a recent announcement by Intergraph to discontinue evolving the FRAMME technology product and shifting the company's focus towards a more GIS-type of technology (its "G-technology") the need to evaluate the impacts of staying with the existing platform or migrating towards a new platform to support AM/FM/GIS has now become a strategic imperative for all Intergraph FRAMME users.

Specifically with respect to Electric Operations, the following issues must be addressed:

- existing data needs to be consolidated into a single data model, and data standards must be established and adopted across all operating regions;
- existing landbases must be replaced with spatially accurate base maps available from New York City and Westchester County; existing electric data must be registered to these base maps, inheriting "real-world" coordinates in the process;

- existing systems need to be replaced with contemporary technology, with an eye towards reducing the long-term cost of ownership

- conduit maps, which currently reside in only raster format, ultimately need to be converted to a digital format and their contents referenced to the same NYC and Westchester landbases

Estimated Completion Date:
2012

Status:

Funding ($000)

Forecast 2009	Forecast 2010	Forecast 2011	Forecast 2012	Forecast Total 2009 - 2012
6,500	5,000	3,000	1,500	16,000

O&M

Historical Year 2007	Forecast RYE 2010	Forecast RYE 2011	Forecast RYE 2012	Forecast Total 2009 - 2012
-	-	2,000	4,000	6,000

CONSOLIDATED EDISON COMPANY OF NEW YORK, INC.
CAPITAL AND O&M
PROCESS IMPROVEMENT
SYSTEM & TRANSMISSION OPERATIONS

DESCRIPTION	Page #
Reference System & Transmission Operations - O&M - IIP-5	
1 Additional HR For NYISO Functions	2
Conductor Cart Training	3
Live Line Maintenance Procedures	4
Training Specialist For TLM Training Programs	5
Update Plan And Profile Drawings	6
Training for Emergency CIG	7

2009 System and Transmission Operations – O&M

Project/Program Title	Senior Planning Analyst – NYISO Functions
Status	
Estimated Service Date	On-going

Work Description:
A Senior Planning Analyst – NYISO Functions position will be established to provide detailed analysis and validate the accuracy of transmission congestion rent excess/shortfall costs associated with NYISO invoicing and TCC auction revenues. The position will prepare monthly congestion excess/shortfall estimates based on the impact of specific line outages. The Senior Planning Analyst will also review and prepare analyses and forecasts pertaining to various NYISO attachments and their impact on the Company.

Justification:
Currently NYISO transmission analysis functions are performed by one individual. The workload and requirements for transmission related activity has increased tremendously over the last year, and this increase in workload is expected to continue.

Attachment N to the NYISO OATT provides methodology to assign congestion rent shortfalls and surpluses. This methodology was recently changed to assign shortfalls and surpluses to transmission owners based on specific line outages and in-service dates. Due to this change, transmission owners will be required to verify all of their line outages on a monthly basis. In addition, as part of the Attachment N agreement, reallocations will be done retroactive to January 2004. To assist the NYISO in calculating this retroactive reallocation, the transmission owners are required to review specific line outages on an hour-by-hour basis dating back to January 2004. Going forward, our plan is to incorporate the verification of specific line outages into our current monthly validation process for transmission congestion rents.

In addition, the Senior Planning Analyst will develop specific processes to prepare more accurate forecasts for the Spring/Fall TCC auctions revenues, along with annual and 5-year forecasts.

To accommodate the additional work, this request is for an individual who will work full time on the validation and accuracy of all transmission NYISO financial related activities.

Estimated Completion Date:
On-going.

Funding ($000)

Historical Year 2007	Forecast RYE 2010	Forecast RYE 2011	Forecast RYE 2012	Forecast Total RYE 2010 - 2012
-	100	100	100	300

2009 System and Transmission Operations – O&M

Project/Program Title	Conductor Cart Training
Status	New program
Estimated Service Date	2011

Work Description:
A conductor cart is a piece of equipment that is placed on overhead transmission conductors and is used to transport line constructors, tools and material to points along the span that require work. Conductor carts are typically used in spans that are too high or too inaccessible for access by large bucket trucks (i.e., Feeder A2233 crossing over the Arthur Kill waterway). Transmission line constructors must be trained to operate the cart.

Justification:
This is specialized work specific to TLM. Training is not provided by the Company so it is necessary to hire outside experts to train TLM personnel. New hires are expected to join TLM during the rate years, and proper training is critical and it will take the new training specialist previously approved some time to establish an in-house training program. The training specialist secured in the 2008 rate case submittal shall develop an in-house conductor cart training program and this project will complete in RYE 2011.

Estimated Completion Date:
2011

Status:
This project was approved in the 2008 rate case submittal.

Funding ($000)

Actual 2007	Forecast RYE 2010	Forecast RYE 2011	Forecast RYE 2012	Forecast Total RYE 2010 - 2012
-	75	75	-	150

2009 System and Transmission Operations – O&M

Project/Program Title	Live Line Method Procedures
Status	New program
Estimated Service Date	2012

Work Description:
Transmission live line work using hot line tools (hot sticks) is limited to some work in substation and transmission towers (i.e., bird nest removal or cotter key replacement). More complex work, involving insulator replacement on transmission towers, for example, is currently not performed. This program involves the development of work procedures, development of a live line manual and formal training by external experts. Contract establishment shall complete in 2008 and program completion is expected in 2012.

Justification:
Procedures need to be modernized and training in those procedures needs to be given to all TLM personnel. Request is based on quotations from vendors. Training and procedure development capability does not exist in-house.

Estimated Completion Date:
2012

Status:
This project was approved in the 2008 rate case submittal.

Funding ($000)

Actual 2007	Forecast RYE 2010	Forecast RYE 2011	Forecast RYE 2012	Forecast Total RYE 2010 - 2012
-	175	175	44	394

2009 System and Transmission Operations – O&M

Project/Program Title	Training Specialist for TLM Training Programs
Status	New program
Estimated Service Date	On-going

Work Description:
This involves the funding required to continue in house training of TLM employees in Live Line Method Procedures and Conductor Cart Training and other programs. TLM will initially hire outside experts to train new TLM employees. The training specialist will then be responsible for training TLM employees. The training specialist will also be responsible for training TLM employees in other specific areas that are not currently provided in-house by the Learning Center.

Justification:
Certain training is specialized and specific to TLM personnel and is not provided by the Company. Continuing new hiring is expected for TLM during the rate years, and it will be more cost effective to have an individual in-house to provide training.

Estimated Completion Date:
On-going

Status:
This project was approved in the 2008 rate case submittal.

Funding ($000)

Actual 2007	Forecast RYE 2010	Forecast RYE 2011	Forecast RYE 2012	Forecast Total RYE 2010 - 2012
-	125	125	125	375

2009 System and Transmission Operations – O&M

Project/Program Title	Update Plan and Profile Drawings
Status	New program
Estimated Service Date	2011

Work Description:
This involves development of usable plan and profile drawings with accurate property line information that can be used in the field to perform work. It involves leveraging the laser survey information obtained from the LIDAR survey and overlaying property line data so that plan and profile maps accurately depict property line data as well as line information.

Justification:
Accurate information is critical to the vegetation management program and key in resolving boundary issues with adjacent landowners and municipalities. This work will be done by one individual in Engineering.

Estimated Completion Date:
2011

Status:
This project was approved in the 2008 Rate Case submittal.

Funding ($000)

Actual 2007	Forecast RYE 2010	Forecast RYE 2011	Forecast RYE 2012	Forecast Total RYE 2010 - 2012
-	50	50	-	100

2009 System and Transmission Operations – O&M

Project/Program Title	Training for Emergency Central Information Group (CIG)
Status	Pending
Estimated Service Date	

Work Description:
The Central Information Group (CIG) is primarily responsible for the acquisition and dissemination of pertinent information in an accurate and timely manner. It serves as the main communication channel for supplying information and making notifications to various operating and support organizations throughout the Company. In addition, and perhaps more importantly, CIG is responsible for notifications to various Federal, State and local agencies. Outside agencies that CIG communicates regularly with include: The DEP, DEC, EPA, Westchester Department of Health, Public Service Commission (Electric, Bulk Power, Gas and Water Divisions), NYC Office of Emergency Management, NYPD, and Westchester County Department of Emergency Services. Under special circumstances, other agencies are also part of the notification process.

CIG personnel work 24/7 to ensure that this important function is addressed at all times. CIG personnel are physically located in the Bulk Power Room at System Operations. The primary tools that they utilize to meet their objectives include phones, direct dedicated lines, a Computerized Notification System for mass notifications and various computer applications.

CIG is responsible for notifications involved with various aspects of the Company's operations including: operations/failures associated with the Electric, Gas and Steam systems and related/contingency conditions, environmental spills and releases, customer outages, accidents and injuries and various other emergency response activities.

In addition to their communication and notification responsibilities, CIG is also responsible for maintaining logs and records of various incidents and resulting notifications as well as various administrative and record keeping functions for other aspects of System Operation activities.

Justification:
Based on experience with recent events, including the summer of 2007, it has been determined that during periods of high activity, supplemental staffing with additional personnel would enhance performance of this critical group. Additionally, during these periods, a higher level of management staffing will allow improved oversight of the entire operation, looking at the big picture to identify potential pitfalls, with an overall objective of ensuring that performance does not suffer as a result of increased volume of activity. Funding requested here will allow for training of these supplemental personnel, who will be drawn from other organizations.

Status:
Pending.

Funding ($000)

Historical Year 2007	Forecast RYE 2010	Forecast RYE 2011	Forecast RYE 2012	Forecast Total RYE 2009 - 2012
-	100	100	100	300

CONSOLIDATED EDISON COMPANY OF NEW YORK, INC.
CAPITAL AND O&M
PROCESS IMPROVEMENT
ELECTRIC OPERATIONS

DESCRIPTION	Page #
Reference Electric Operations - Capital - IIP- 6	
Work Management Systems	2
Accounting by Network	3
Energy Services CSR Automation	4
Reference Electric Operation - O&M - IIP- 7	
Area System Profile Program	7
Technical Support/NYC Regulatory Liaison Program	9
Field Auditing & Quality Control Program	10
NAICS Code Append	11
Establishment of a Regional Contractor Oversight / Review Group	12
Electric Operations Process Management - EOPM	13
Engineering Contractor -Vendor Layouts	15
Enhanced Project Planning in Electric Operations	16
Electric Distribution Equipment Reconditioning & Repairs	18
Accounting By Network	19
Mapping System Upgrade - IT	20
Co-Ops	23
RMS Response Group	24

Electric Operations - 2009 Capital

Project/Program Title	Work Management Systems
Status	
Estimated Service Date	2012

Work Description:
Implement a comprehensive work management system that will track work and time spent into a common platform. This will provide an environment where users can budget, plan, acquire, schedule and track the use of their resources. Appropriate links will be established between related business area, asset depository, financial data, specification compliance and human resources. By organizing processes around one common platform, obsolete technologies will be eliminated.

Justification:
Electronically standardizing data capture results in data being entered once and seamlessly updating all systems. Implementing automated processes to improve productivity by reducing duplicate data entry. Accuracy of data can be validated at a single point of origination. The need to train people on the use of multiple systems will be eliminated. You can align your processes and analysis along a common platform that fosters standardization measurements corporately. Capturing additional data about work will improve our ability to analyze what we do, which will allow us to work more efficiently and make decisions that will reduce cost. Retrieval of information that is accurate and pertinent will enhance our ability to comply with inspection activity and PSC required reporting.

Estimated Completion Date:
April 2009 (Phase 0 Study)
Projected for 2011 (Implementation)

Status:

Funding ($000)

Forecast 2009	Forecast 2010	Forecast 2011	Forecast 2012	Forecast Total 2009 - 2012
1,500	13,500	18,000	32,280	65,280

Electric Operations - 2009 Capital

Project/Program Title	Accounting by Network
Status	
Estimated Service Date	January 2009

Work Description:
Implementing work volume/unit cost by network will require extensive IT solutions since many of the existing work management and accounting subsystems would need to be modified – requiring substantial time to develop, test, and implement to make sure we meet Sarbanes-Oxley standards, as well as to make sure the information is accurate.

Justification:
Budgeting and tracking actual cost by network and by program without a comprehensive IT solution would require the creation of several thousand new account numbers, adding approximately 13,000 new capital work orders, 4,800 new Company account numbers, and 2,200 new project identifiers.

Estimated Completion Date:
January 2009

Status:
Majority of IT development done in 2007 and 2008

Funding ($000)

Forecast 2009	Forecast 2010	Forecast 2011	Forecast 2012	Forecast Total 2009 - 2012
300	-	-	-	300

O&M:

Historical Year 2007	Forecast RYE 2010	Forecast RYE 2011	Forecast RYE 2012	Forecast Total 2009 - 2012
-	350	350	350	1,050

Electric Operations - 2009 Capital

Project/Program Title	Energy Services CSR Automation
Status	
Estimated Service Date	2009

Work Description:
Energy Services and Information Resources are modernizing the entire workflow in Energy Services, involving clerical, Commercial Service Representatives and Customer Project Managers. This project is designed to improve communication with the customer in order to maintain and improve 'customer relationship'.

The outcome of this effort will be:

1. Improved Customer Service through:
    a. Automated Contractor and Customer communications.
    b. Automated telephone answering solutions, giving updates and scheduling
    c. Real time service date scheduling, rescheduling and notifications.
2. Improved Productivity through:
    a. Wireless field system
    b. Automated letters
    c. Real time scheduling
    d. Automated data entry
    e. Checklist field inspections
    f. GPS field sheets
    g. Digital files

Currently these activities are done manually or not at all. Even those activities that are done manually often do not reach the desired or mandated level of communication with the customer. The manual process and reliance on voice communications are inefficient and the allocation of resources to the priority work is not as effective as it needs to be.

Components of the System

1. ***Web Application***
   The application will provide self service for customers and contractors. The application has three main features. The first is user registration the second is the ability for user to check the status of existing and new CORS cases. The third is the ability to initiate cases on line. The goal is to direct many of the 40k+ applications received and 2m phone to self service via the web.
2. ***Automated Telephone System*** [IVR]
   The system will extract the answer to the customers question from the CORS system based on the Web application platform. This will significantly reduce voice mail and allow the customer to get real-time information on the status of their job.
3. ***Commercial Operations Reporting System (CORS)***
   Commercial Operations Reporting System (CORS) is the IMS system that tracks, controls and reports on Energy Services work. That system, developed 20+ years ago is voluminous and antiquated. It will be replaced with a new web based Project

Management System to allow communication with E-Trac and other company systems.

a. ***Field Computer***
Representatives will shift their work from predominantly office to field. All job folders will be digital, allowing them to start and/or quit in the field. Integration with E-Trac, Cors and the Service Date systems will allow them to release work and communicate with the customer and contractor instantaneously. Field results will be automatically annotated.

b. ***Service Date System:***
Customers are most dissatisfied with us when they are not given a service date or when a service date is cancelled. This system will allow a representative, while in the field, to pick a service date for a job. That date will be automatically communicated to the operating group, the customer and the contractor. Any changes, due to emergencies, will result in an automatic rescheduling, with automated notification to Energy Services, the customer and the contractor.

Estimated Cost & Schedule

The Energy Service M&A System involves an initial capital cost of $2,286,200 and an annual maintenance of $210,600. The improvement in customer service and satisfaction is priceless. An additional capital cost of $400,000 and additional annual O&M cost of $52,000 is anticipated in 2009 to add the CPMs to the program.

Justification:

Customer Advantage

- Presently the CSR is in the field or doing paperwork [unavailable to answer calls] 70% of the day. With the new system the customer will get one call answers 100% of the time, rather than leaving callback messages.
- The proactive calls will keep the customer alert to the progress and potential deficiencies of their contractor.
- With the planned replacement of the CORS system, the customer will know when their job will be done, will be called if the schedule changes and will be connected to the proper operating group if the scheduled crew does not arrive.

Contractor Advantage

- Same as Customer, except the Contractor will have the added advantage of getting information on each of his jobs using his license number.
- The contractor, when ready, with all the necessary requirements satisfied, will be able to schedule and inspection appointment automatically.

CSR Advantage

- The CSR will devote the 35% of his time currently spent on the phone toward field inspections and releasing work.
- With the new Project Management System the CSR will be free to devote more time to field work.
- The calls the CSR gets will be routed directly to his cell phone. Screened he knows they are important calls.
- Having the Customer and Contractor know the status of their job and what is needed to move forward will improve efficiency and Customer relations, without tying up human resources.

Electric Operations - 2009 Capital

Estimated Completion Date:
2009

Status:

Funding ($000)

Forecast 2009	Forecast 2010	Forecast 2011	Forecast 2012	Forecast Total 2009 - 2012
600	400	-	-	1,000

O&M

Actual 2007	Forecast RYE 2010	Forecast RYE 2011	Forecast RYE 2012	Forecast Total
-	275	275	275	825

Electric Operations - 2009 Operations & Maintenance (O&M)

Project/Program Title	Area Profile System
Status	
Estimated Service Date	2008

Work Description:
A new mapping system known as the Area Profile System (APS - Phase 1 and Phase 2) was completed within the Energy Efficiency Programs Department. Essentially APS is built on a MapInfo platform, incorporates US Census data, CIS account information, New York City Department of buildings, Dun and Bradstreet Business Information and engineering connectivity (feeders, services, M&S plates) information from Cuflink. APS permits users to develop population/household estimates down to the census tract, block group and block levels.

APS remains a work in progress and requires additional development phases, assessment, integration, engineering connectivity portals. APS is sourced from CIS and Cuflink and number of external databases and requires regular maintenance and support in terms of data refreshment (CIS, Cuflink, EMOPSYS, NYC Department of Buildings, Census Updates, other public and proprietary data bases) and hosting.
Justification:

APS is essential (as set forth in the Plans and Milestones for NYSPSC Staff Priority Recommendations) in order to identify population and household information down to the requested geographic level (zip code, block group, M&S Plate, etc) in consonance with CECONY account information. Without APS, the Company will not have in-house application to systematically collect, assess and evaluate critical population and household impact during a contingency or system emergency.

Since its inception in June, 2007, APS has been employed during CERC events and is a key system in the Command Center. Information and statistics extracted from APS support other systems in providing key customer data, population, households/employment by M/S plate, census tract, census block, zip code, etc. Demand response customer information is fully loaded which supports callable load activities during contingencies and system emergencies.

APS Phase 2 was completed in the February, 2008 and offers greater functionality including: easier viewing, better customer identification, increased data export capability. APS data migrated from MapInfo tables to a SQL server database. The transitioned to SQL offers better organization and maximizes system operation, updates and flexibility. In addition, APS Phase 2 includes the entire NYC Department of Buildings database and the Dun and Bradstreet business information system or 350,000 businesses domiciled in NYC and Westchester County.

APS Phase 3 which is now in progress will provide for the integration of CECONY account data, New York City Department of Buildings and Dun and Bradstreet business information with NYC/Westchester County Block/Lot information. Phase 3 should also provide clearer selection boundaries, a custom point selection tools, and advanced selection/query capability. Overall, information will be available at the building level which offers essential data when assessing emergency situations, isolating customers (including behind the meter customer data) and building marketing support for energy efficiency/demand response program development and execution.

Electric Operations - 2009 Operations & Maintenance (O&M)

For the forecast period in question, approximately $100,000/year (Capital) will be allocated to enhance APS functionality, purchase additional hardware/software, contract for programming to establish higher level searches, compile/integrate additional databases, ease user operation/interface and expand viewing features.

In addition, approximately $100,000/year (O&M) will be allocated to continue all required licenses, enlist technical support/product maintenance, conduct ongoing/future training efforts, and internal labor to manage, operate and upload/integrate internal data/external information.

Estimated Completion Date:
December 2012

Funding ($000)

Capital

Forecast 2009	Forecast 2010	Forecast 2011	Forecast 2012	Forecast Total
100	100	100	100	400

O&M

Actual 2007	Forecast RYE 2010	Forecast RYE 2011	Forecast RYE 2012	Forecast Total
0	100	100	100	300

Electric Operations - 2009 Operations & Maintenance (O&M)

Project/Program Title	Technical Support/NYC Regulatory Liaison Program
Status	
Estimated Service Date	

Work Description:
Technical Support is attempting to rebuild the knowledge and technical guidance critically needed to support Energy Services. Existing staffing of two (2) full time employees (FTE's) representing 3400 annual hours, provide administrative review and issuance of all Energy Service related technical specifications. Representatives are expanding their roles as electrical and gas code liaison with New York City, contractors and other trade organizations. As a result of operational deficiencies the area role is expanding to include conducting service classification billing reviews, specification compliance reviews and field reviews for specification compliance. The area will evaluate Energy Services training needs and requirements as related to specifications, tariffs and billing codes and provide training where possible and encourage Con Edison's presence at trade seminars and professional conferences.

The annual associated hours of human resources needed to meet all needs is 6344 (3.7 FTE's), an increase of 2944 (1.7 FTE's). Additionally, related services for telecommunications, computers and office space will be needed for the additional 1.7 FTE's.

Justification:
With the attrition of human resources over the years our role in assessing training needs, providing technical support and representing Con Edison within the electric, gas and steam industries has declined. The proposed re-staffing of this critical area will help to provide customers and contractors with efficient and safe service installations and upgrades

Estimated Completion Date: Ongoing

Status:

Funding ($000)

Historical Year (2007)	Forecast RYE 2010	Forecast RYE 2011	Forecast RYE 2012	Forecast Total
150	220	220	220	660

Electric Operations - 2009 Operations & Maintenance (O&M)

Project/Program Title	Field Auditing and Quality Control Program
Status	
Estimated Service Date	

Work Description:
2 full time employees (FTE's) representing 3400 annual hours are responsible for Energy Services preparation and reporting of self – assessment administrative reviews of goal 1 & 2 compliance. Additional responsibilities include review and updating of all Energy Service related Customer Service Procedures (CSP's) and Construction Administration Manual (CAM) reviews. Representatives are expanding their role to include field self-assessment reviews of completed service rulings and service installations, Energy Service compliance reviews of 100 foot rule, field visit reporting in Commercial Operations Reporting System (CORS), blue book compliance, specification compliance, and CORS inventory control.

The annual associated hours of human resources needed to meet all needs is 6,800 (4.0 FTE's), an increase of 3,400 hours (2.0 FTE's). Related services for tele-communications, computers and office space will be needed for the additional 2.0 FTE's.

Quality Control:
Existing staffing of 9 FTE's (15,300 annual hours) are responsible for the preparation and distribution of Energy Service monthly goals and performance reports. Representatives are responsible for the productivity analysis of each Energy Service field representative. Responsibilities include the preparation and generation of all Energy Service monthly performance reports, review and issuance of monthly goals book, budget accruals, review and preparation of Energy Services budget and revenue requirements. Representatives are responsible for administrative maintenance and control of Energy Services customer satisfaction surveys, quarterly and annual reporting, hardware and software upgrades and special customer mailings. Representatives are responsible for all Energy Services safety training and scheduling, preparation of safety performance reports and design and implementation of safety incentive programs. This area will expand responsibilities to include Energy Service contact update, equipment location and verification and the development and maintenance of an Energy Service CSR/CPM productivity system.

The annual associated hours of human resources needed to meet all needs is 23,290 (13.7 FTE's) and increase of 7990 hours (4.7 FTE's). Related services for tele-communications, computer and office space will be needed for the additional 4.7 FTE's.

Justification:
Independent organizational review and auditing of Energy Services performance in procedural compliance. Centralized area eliminates administrative redundancy in Energy Services operating areas processing of performance and evaluation reports.

Estimated Completion Date: Ongoing

Status: New Program

Funding ($000)

Historical Year (2007)	Forecast RYE 2010	Forecast RYE 2011	Forecast RYE 2012	Forecast Total
150	394	394	394	1182

Electric Operations - 2009 Operations & Maintenance (O&M)

Project/Program Title	NAICS Code Append/Business Information Extract
Status	Ongoing
Estimated Service Date	

Work Description:
Annual update of North American Industry Classification System (NAIC) appends to the Company's Customer Information System (CIS). The annual update will provide key information for purposes of customer segmentation, load analysis, target marketing, and Demand Side Management (DSM) potential. A comprehensive list of all businesses operating within the service area will be provided and linked back to CIS and further integrated within the Company mapping system.

Justification:
Data is essential for assessing and evaluating contingencies, load research, customer contact, evaluating customer trends and requirements. In cases of emergencies or system contingencies, the lack of this data could impact the implementation of efficient load shedding strategies and prioritization of Demand Side Management resources.

Estimated Completion Date:
Ongoing

Status:

Funding ($000)

Historical Year (2007)	Forecast RYE 2010	Forecast RYE 2011	Forecast RYE 2012	Forecast Total
40	12	12	38	62

Electric Operations - 2009 Operations & Maintenance (O&M)

Project/Program Title	Electric Operations - Contractor Oversight Program (B/Q and Manhattan)
Status	
Estimated Service Date	2008

Work Description:
This request is for increased funding for the Contract Oversight function for Electric Operations. The request is for 10 people and associated expenses to perform contract administration and contractor oversight for increased usage of established overhead and underground contractors. This section will be responsible for identifying departmental requirements, requisitioning service contracts, and coordinating procurement activities. The section will also be responsible for overseeing contractor work, monitoring contractor performance, inspecting contractors on site and paying contractor invoices.

Justification:
In the past several years, Electric Operations has increased their use of contractors (i.e. underground cable and splicing; overhead construction) and taken the responsibility for contract administration of these specialized service contracts. New requirements for contractor oversight were also introduced Corporate-wide and within Electric Operations, including those in the Contract Administration Manual and Electric Operations Procedure 5-1-6. The Contract Oversight section will enable Electric Operations to administer contracts and oversee contractors in accordance with the new requirements.

Estimated Completion Date:

Planning and Budgeting:
Staffing for this enhanced function will consist of (5) Inspectors, (2) clerical support individuals, (2) managers and (2) engineers. In addition to Labor expense, (10) supervisory vehicles; (9) sets of furniture and (12) laptop computers will be required. Costs to perform this function will be included in our manhour clearing accounts and was allocated to O&M based on the 2006 clearing to O&M ratio – approximately $126K / year.

Status:

Funding ($000)

Historical Year (2007)	Forecast RYE 2010	Forecast RYE 2011	Forecast RYE 2012	Forecast Total
0	237	237	237	711

Electric Operations - 2009 Operations & Maintenance (O&M)

Project/Program Title	Electric Operations Process Management – Edison Program
Status	
Estimated Service Date	On Going

Work Description:

The Edison Program is a move toward operational innovation through development and deployment of adaptive business intelligence software focused on managing business risk and driving out inefficiencies. This corporate -wide transformational initiative also enhances customer service and reliability, and increases the assurance that new system designs will be effective when introduced to the electric grid.

The program is a collaborative effort among Con Edison, Inc. ("CEI"), Electric Distribution Design, Inc. ("EDD"), and academic research institute.

Three major software systems are being developed and integrated with existing legacy software systems to form one Integrated System Model ("ISM") of the business:

> Plant Model ("PM") – A high-resolution, flexible and integrated model of Con Edison's entire electrical infrastructure from transmission through substations to distribution and to every customer.
>
> Business Process Model ("BPM") – A flexible model designed to capture and automate tasks and information processes throughout the company.
>
> Machine Learning ("ML") – Adaptive dynamic programming that couples to these models and existing information to create intelligence that optimizes the business in this uncertain world.

An expansion of our Distribution Engineering staffing is required in order to ensure that the new processes are driven deeply into the company's processes as well as integration into the day to day work practices of our field personnel.

Justification:

The Edison Program is using Computer Aided Lean Management (CALM) as the methodology for running a business based on the common sense approach of measuring the results of actions taken and using those measurements to design new processes that drive out inefficiencies and reduce risks.

In the ISM, we will have modeled the business so that alternatives can be explored to find innovations required to improve the company's enterprise value. The ISM is being uniquely designed to have data entered once, in a quality controlled manner and that information will then be readily available throughout the company to solve problems by anyone in the company. The ISM provides a unified model of all vital assets and components of the business, preserved with their topological connectivity. Algorithms from all organizations are then layered on top of this core information. This is a major paradigm shift in the running of this business. All important decisions are modeled, and this information is used and shared across the entire Enterprise.

Within CALM, the ISM provides the tools needed to 'see' the competitive landscape and the uncertain environment within which the company operates. Much of the computer intelligence to interpret the meaning of feedback loops, required to improve performance, will be provided by machine learning and modeling tools are being developed at CCLS for this project. The company will use these tools to adapt CALM in order to become more proactive, adaptive and able to perform successfully in the future as the business we are in changes.

The adoption of CALM is expected to provide CEI with a significant competitive advantage in its existing core business of electric and gas utilities.

Electric Operations - 2009 Operations & Maintenance (O&M)

Estimated Completion Date:

Status:

Funding ($000):

Historical Year (2007)	Forecast RYE 2010	Forecast RYE 2011	Forecast RYE 2012	Forecast Total
0	800	800	800	2,400

Electric Operations - 2009 Operations & Maintenance (O&M)

Project/Program Title	Engineering Contractor – Vendor Layouts
Status	
Estimated Service Date	

Work Description:
Supplement our Energy Services engineering staff with an engineering contractor to produce layouts. The consultant will be used to supplement our resources by completing the less complex drafting work.

Justification:
In recent years NYC has issued record levels of new permits for new and or renovated buildings. There were 31,902 permits for new units of privately owned housing in 2007, 30,927 in 2006 and 31,599 in 2005 for New York City. Over the three year period, this significant increase in permit/construction activity has resulted in a 7% increase in our service ruling activity. During this time, our engineering resources have remained relatively constant. Increased work volumes, have directly impacted our ability to evaluate, design and develop construction documents for the larger major projects in a timely manner. Specifically, these more complex projects require extensive system studies requiring more time to complete a sound analysis and design with the degree of technical excellence required in maintaining the integrity of our system's reliability. Many of these projects result in extensive infrastructure needs such as; secondary mains reinforcement, primary feeder extensions and transformer vault installations to adequately support this new/additional load. In addition, the construction documents (Company layouts) for these projects are equally as complex. They require extensive evaluation and subsurface investigation because of the many unique field conditions and sidewalk constraints making vault placement difficult and it often necessitates pre-fielding, test pits and soil borings to ascertain the constructability of the infrastructure as proposed. In construction layouts alone we have experienced approximately a 3% increase over the past year and approximately a 70% increase from 2004. In part, we have augmented our work force with the utilization of contract resources to complete the drafting, less technical aspects of the layout work. However, our complex distribution system makes it difficult to out source design work, thus making it essential that we maintain the expertise for the analysis and design work in house.

In addition to work load increases, Customer Engineering groups have experienced constant attrition due to a senior work force and promotional opportunities. While we are constantly filling these openings, the use of contract resources has provided the flexibility and balance to maintain continuity in workflow, specifically on the less complex projects.

Given the work volume increases, the constant attrition and the significance of providing excellent customer service, the need to supplement our Engineering staff by an engineering consultant is vital. The consultant will continue to be used to supplement our resources by completing the less complex drafting work. They provide an expanded resource pool that is essential to achieving the level of response our customers need for the success of their project.

Estimated Completion Date: Ongoing

Status:

Funding ($000)

Historical Year (2007)	Forecast RYE 2010	Forecast RYE 2011	Forecast RYE 2012	Forecast Total
276	497	497	497	1491

Electric Operations - 2009 Operations & Maintenance (O&M)

Project/Program Title	Enhanced Project Planning in Electric Operations
Status	
Estimated Service Date	Ongoing

Work Description:

Planning Group
Increase staffing for Regional Distribution Engineering to enhance project planning and oversight for Electric Operations. Each regional Distribution Engineering group will have additional staff that will be responsible for all Electric Operation Capital Programs including Summer Prep Work. This increased staff will ensure completion of work based on priorities and milestone schedules. The team will coordinate all work and will reset priorities as opportunities for efficiencies are identified.

Equipment Analysis Group
The Distribution Engineering Equipment Analysis Group was formed in 2007. The primary goal of this group is to analyze the data associated with Distribution Equipment to identify failure trends that will support our efforts to mitigate public safety concerns.

To achieve this goal, the group will focus on the following initiatives:

- Provide better documentation, tracking, and analysis of equipment field returns, quality issues, and failures.
- Provide direction to the EO-10,110 inspection program to prioritize the high risk equipment inspections.
- Provide weekly updates on the status of Failures, Returns, Quality issues, etc.
- Provide data support to Engineering specifications and project decisions.
- Provide feedback to engineering and field forces on equipment performance.
- Perform risk based studies to mitigate equipment failures that impact the safety of the public and Company employees.
- Support the development of the Equipment related budgets.
- Improve the accuracy of lab sample records, CINDE, DEMS, etc.
- Develop systems that accurately track the Equipment data and ensure mechanisms are in place to validate the data to ensure accuracy.
- Support the integration and develop tools to monitor the current internal health of the transformers (DGOA and RMSPTO).
- Develop a system to replace DEMS and CINDE.
- Support and coordinate the sharing of data with Columbia University and Polytechnic University for data mining and trending studies.

The dedicated review of this data, in conjunction with enhanced engineering analysis of field returned transformers, will dramatically reduce our public safety concern with transformers.

Justification:
The Capital Budget program for Electric Operations has expanded over the last 5 years. We are performing more detailed analysis to design enhancements to the distribution system and meet changing demand and operating requirements. No one organization has complete oversight of electric distribution capital construction projects. Currently, various functional groups and organizations are involved, such as regional Engineering, Electric Construction, and Construction Management (overseeing contractor crews). Each of these groups focuses only on their portion of the project, which at times results in missed opportunities and lost efficiencies.

This enhanced project planning, oversight and designing capability will provide better overall coordination, resulting in enhanced synergies and efficient deployment of resources.
The Equipment section Analysis group was initiated in 2007 and has been taking a pro-active approach to the mitigation of the risks associated with underground transformers. The group has been working with existing databases and available information to support the analysis of equipment. In order to ensure that accurate, timely and comprehensive information is obtained, additional resources will be required to support the review and collection of associated data on field returned equipment. This will require additional manpower to review the equipment and also the development of enhanced applications to collect the information.

These initiatives will further enable this group is to analyze the data associated with Distribution Equipment to identify failure trends that will support the Company's efforts to mitigate public safety concerns and ensure the reliability and long service life of the equipment.

Program Requirements:

Operating Supervisors - 2
Distribution Mechanic A – 5
Clerical – 1
Splicing Van – 1
Supervisor Vehicle – 2
Additional funds for Shop support of root cause analysis work and interdepartmental charges

Estimated Completion Date:
Ongoing – Incremental funding for Regional Distribution Engineering Groups.

Status:

Funding ($000)

Historical Year (2007)	Forecast RYE 2010	Forecast RYE 2011	Forecast RYE 2012	Forecast Total
7,822	9,358	9,358	9,358	28,074

Electric Operations - 2009 Operations & Maintenance (O&M)

Project/Program Title	Electric Distribution Equipment Reconditioning & Repairs
Status	Ongoing
Estimated Service Date	

Work Description:
Recondition, repair and test electrical distribution equipment, including network transformers, network protectors, pole-type transformers, mobile transformers, and mobile generators.

Justification:
Additional personnel are required to support reconditioning and repair of electric distribution equipment at higher levels than experienced during the historic rate year. These repairs and the reconditioning work are needed to provide essential electrical distribution equipment for installation in the field.

The ED2 equipment forecast includes a higher number of network transformers and network protectors when compared to 2007 and previous years. The increase is mainly due to a new work plan to reduce banks-off, relieve transformer loading, and for New Business installations. This work will continue through the rate case period. Additionally, the field inspection program will continue to focus on units that may potentially fail, resulting in a high volume of transformers identified as candidates for replacement (CFR).

Reconditioning and performing field repairs of equipment to mitigate premature failure or to extend safe and reliable equipment service life provides a significant cost savings when compared to replacing the equipment with new purchases. In 2006, electric distribution equipment reconditioning and repairs saved the Company approximately $5.8 million. In 2007, electric distribution equipment reconditioning and repairs saved the Company approximately $6.45 million

Estimated Completion Date:
Ongoing

Planning and Budgeting:

Status:
Ongoing.

Funding ($000)

Historical Year 2007	Forecast RYE 2010	Forecast RYE 2011	Forecast RYE 2012	Forecast Total
693	1018	1018	1018	3054

Electric Operations - 2009 Operations & Maintenance (O&M)

Project/Program Title	Accounting By Network
Status	
Estimated Service Date	January 2009

Work Description:
Implementing work volume/unit cost by network will require extensive IT solutions since many of the existing work management and accounting subsystems would need to be modified – requiring substantial time to develop, test, and implement to make sure we meet Sarbanes-Oxley standards, as well as to make sure the information is accurate.

Justification:
Budgeting and tracking actual cost by network and by program without a comprehensive IT solution would require the creation of several thousand new account numbers, adding approximately 13,000 new capital work orders, 4,800 new Company account numbers, and 2,200 new project identifiers.

Estimated Completion Date:
January 2009

Status:
Majority of IT development done in 2007 and 2008

Funding ($000)

O&M:

2007 Historical	Forecast RYE 2010	Forecast RYE 2011	Forecast RYE 2012	Forecast Total
-	350	350	350	1,050

Electric Operations - 2009 Operations & Maintenance (O&M)

Project/Program Title	Mapping Systems Upgrade
Status	
Estimated Service Date	December 31, 2012

Work Description:
In parallel with similar efforts for gas and steam mapping systems, the Electric Operations mapping systems issues will be addressed over a 5-year period as follows:

Year 1 ($4.0 million)
- develop a detailed, step-by-step strategic plan with discrete timelines
- conduct thorough documentation of existing data models and landbases
- conduct thorough investigation of NYC and Westchester base map data
- conduct a detailed functional requirements analysis and develop a system specification
- evaluate vendor products and select a new mapping system platform
- develop common conceptual electric GIS data model
- develop technical specifications for data registration and migration
- evaluate data migration subcontractors and award contract(s)

Year 2 ($6.5 million)
- migrate and spatially reconcile data, establish new mapping environment for Brooklyn, including integration with engineering and operations models
- adopt the same process for Staten Island and commence system implementation
- adopt the same process for Queens and commence system implementation

Year 3 ($6.5 million)
- adopt the same process for Manhattan and commence system implementation
- adopt the same process for Bronx/ Westchester, and commence system implementation
- complete system implementation and integration efforts

Year 4 ($2 million)
- develop a detailed plan for conduit map data creation, registration and migration
- evaluate data migration subcontractors and award contract(s)
- begin data creation and registration for Manhattan and Brooklyn

Year 5 ($2 million)
- begin data creation and registration for Queens, Bronx and Westchester
- complete Manhattan and Brooklyn and migrate data to common electric model
- complete Queens, Bronx and Westchester and migrate data to common electric model

Note: Years 4 and 5 costs are capital components of the envisioned conduit map project – depending on the extent of manual conversion work, there may be a significant associated O&M expense.

Justification:
The Company operates and maintains six corporate mapping applications in support of its electric, gas and steam distribution systems. Significant business benefits can be realized by migrating to a single automated mapping / facilities management environment, with a single data model, and in giving the Company's facilities data a spatially accurate orientation. To the greatest extent possible, a new system would provide, either inherently or via extended applications, the functional capabilities of map viewing, plotting, specialty mapping, engineering design and system modeling that are in use in the existing environment.

Electric Operations - 2009 Operations & Maintenance (O&M)

Since the mapping systems were originally developed, Con Edison has undergone significant structural and organizational changes in response to the need to control costs. Operating groups centralized core functions and merged geographic areas in electric and gas distribution. For example, Bronx and Westchester Electric Operations were combined, as were Brooklyn and Queens. In the process, electric control centers were reduced from six to four. Similar consolidations were implemented in regional engineering organizations, where the use of multiple mapping applications becomes problematic. Gas Operations merged Bronx and Westchester operating groups, and those in Manhattan and Queens. Its gas control centers and engineering groups were reduced from four to one.

While operations across the regions have not yet been combined, there is potential benefit in having system platforms in place that facilitate future merger and acquisition activities. Especially in Electric Operations, reducing the number of mapping systems would have a favorable impact on operating and maintenance costs. Updating and maintaining multiple land bases and map products in a consolidated set of applications would be more efficient and provide the Company with more timely system updates. Furthermore, integration with the engineering and operations models, as well as other systems, would be greatly simplified and would better support corporate asset management and work management objectives.

The Company's mapping systems include VISION (Intergraph FRAMME-based applications in support of all gas and all electric secondary facilities), Feeder Mapping System (separate non-FRAMME application for electric primary – feeders), Electric Distribution Facilities Information System (application developed for Staten Island electric primary, secondary and C&DO maps), Intelligent Database Mapping System (maintains Brooklyn's electric primary, secondary and C&DO maps), Steam Operations Mapping Information System (for the entire steam distribution system), and Electric Transmission (AutoCAD). With the exception of the IDMS system in Brooklyn that is exclusively Oracle, all Con Edison's mapping systems use Bentley Microstation as the graphics engine, although other, ancillary data is stored in AutoCAD (e.g., Electric Transmission).

In addition to internal grounds for looking towards a more consolidated mapping environment, changes in the direction of the present Intergraph FRAMME technology are making the need to investigate other options a high priority. Because of a recent announcement by Intergraph to discontinue evolving the FRAMME technology product and shifting the company's focus towards a more GIS-type of technology (its "G-technology") the need to evaluate the impacts of staying with the existing platform or migrating towards a new platform to support AM/FM/GIS has now become a strategic imperative for all Intergraph FRAMME users.

Specifically with respect to Electric Operations, the following issues must be addressed:

- existing data needs to be consolidated into a single data model, and data standards must be established and adopted across all operating regions
- existing landbases must be replaced with spatially accurate base maps available from New York City and Westchester County; existing electric data must be registered to these base maps, inheriting "real-world" coordinates in the process
- existing systems need to be replaced with contemporary technology, with an eye towards reducing the long-term cost of ownership
- conduit maps, which currently reside in only raster format, ultimately need to be converted to a digital format and their contents referenced to the same NYC and Westchester landbases

Estimated Completion Date:
December 31, 2012

Electric Operations - 2009 Operations & Maintenance (O&M)

Status:

Funding ($000)

Historical Year 2007	Forecast RYE 2010	Forecast RYE 2011	Forecast RYE 2012	Forecast Total
-	-	2,000	2,000	4,000

Electric Operations - 2009 Operations & Maintenance (O&M)

Project/Program Title	Co-Ops
Status	
Estimated Service Date	Ongoing

Work Description:
Hire seven Co-Ops to provide an opportunity for college students to have hands on job experience while they are still in college. In Con Edison's program, Co-Ops get hands on field experience and training, provide administrative support to managers and supervisors, and get an understanding of the way we work at Con Edison.

Con Edison's Co-Op program is a career related educational program to help students get job experience before they graduate. This practical training is a good exposure and helps students obtain jobs after they graduate from college.

Justification:
Good analysis requires good data. For management and supervisors of a company to analyze data, the data needs to be organized in such a manner that it is legible. Co-Ops will help the company overall in neatly organizing all kinds of information into databases and updating them as necessary. Not only will the managers and supervisors be able to utilize the Co-Ops administrative support, but the co-ops themselves will get hands on field experience and training, and get an understanding of the way we work at Con Edison.

Estimated Completion Date:
Ongoing

Status:

Funding ($000)

Historical Year (2007)	Forecast RYE 2010	Forecast RYE 2011	Forecast RYE 2012	Forecast Total
-	350	350	350	1,050

Electric Operations - 2009 Operations & Maintenance (O&M)

Project/Program Title	RMS Task Force
Status	
Estimated Service Date	On going

Work Description:
To establish and deploy an RMS Task force that will primarily focus on maintaining the expected reporting rate of 90% for each network.

Justification:
This group's primary concern will be to maintain the RMS reporting rate at 90% for each distribution network. In addition this group will be responsible for keeping continuity between R&D, SCADA, & company field forces. The RMS Task force will work closely with Engineering and Tech Labs in efforts to develop new technology.

This operation will be deployed system wide as required to address under reporting networks by repairing or replacing RMS units not reporting. The base staffing plan will require the establishment of 7 field crews and associated equipment (trucks, tools, site setup, etc). During high work volumes or for summer preparation, 8 additional crews may be deployed from existing electric operations staff to augment these efforts.

Estimated Completion Date:
On Going

Status:

Funding ($000)

Historical Year 2007	Forecast RYE 2010	Forecast RYE 2011	Forecast RYE 2012	Forecast Total
-	1,820	1,820	1,820	5,460

Exhibit __ (IIP-26)

Con Edison DSM Forecast

DSM Program	MW Forecast in Dec. 2007	Current MW reduction forecast[1]	Change from Dec. 2007	Comments
DSM Phase 1 (Pilot)	25	21	-4	Reduction for MW installed
DSM Phase 2 (2005 Rate Plan)	46	46	0	No change
DSM Phase 3 (2005 Rate Plan)	33	33	0	No change
DSM Phase 4 (2005 Rate Plan)	98	69	-29	Change from forecasted to contracted amount
DSM Phase 5 (2008 Rate Order)	n/a	30	30	30 MW approved for contracting
New Targeted DSM	93	108	15	Change in Phase 4 amount and in projected deferral amounts to align with the EEPS Straw Proposal
Non-Targeted DSM (In-City)	304	330	26	Alignment with Straw Proposal and continued refinement and addition of programs for EEPS filing
Non-Targeted DSM (Westchester)	48	48	0	No change
TOTAL	647	685	38	

[1] As of April 10, 2008, reflecting the programs the Company filed in the Energy Efficiency Portfolio Standard proceeding.

Con Edison Targeted DSM Program Status as of April 29, 2008

All amounts show are kilowatts of demand

Pilot		Need	Installed & verified	Pipeline*	Total
	2005	3,000	2,198	-	2,198
	2006	13,000	10,374		10,374
	2007	10,000	8,169	415	8,583
	2008	21,000	8,715	12,294	21,009
	Sub Total	47,000	29,455	12,709	42,164
Phase 1 - 2005 Rate Plan		Need	Installed & verified	Pipeline*	Total
	2008	11,000	8,911	2,334	11,245
	2009	15,000	1,703	1,099	2,802
	2010	11,000	-	-	-
	2011	9,000	-	-	-
	Sub Total	46,000	10,614	3,432	14,046
Phase 2 - 2005 Rate Plan		Need	Installed & verified	Pipeline*	Total
	2008	2,000	389	1,412	1,801
	2009	6,000	-	-	-
	2010	9,000	-	-	-
	2011	16,000	-	-	-
	Sub Total	33,000	389	1,412	1,801
Phase 3 - 2005 Rate Plan		Need	Installed & verified	Pipeline*	Total
	2010	46,000	-	-	-
	2011	11,000	-	-	-
	2012	12,000	-	-	-
	Sub Total	69,000	-	-	-
	Grand Total	195,000	40,458	17,554	58,011

* Pipeline refers to projects approved for pre-inspection and projects installed but not yet verified.

Energy Efficiency Program Department
($ 000's)

Capital			
	2009	2010	2011
IT Systems Development	$2,184	$1,184	$1,184
Area Profile System	$100	$100	$100
Capital Total	$2,284	$1,284	$1,284
O&M			
	Rate Year 1	Rate Year 2	Rate Year 3
Labor	$1,129	$920	$1,104
Non Labor [1]	$1,097	$0	$26
O&M Total	$2,226	$920	$1,130
note [1]:			
Non Labor O&M components			
500 MW DSM	$550	$0	$0
Area Profile System	$75	$0	$0
NAICS Code Append	($28)	$0	$26
Smart Electric Technologies	$500	$0	$0