CONSOLIDATED EDISON COMPANY OF NEW YORK, INC. 2017-2019 GAS OPERATIONS CAPITAL PROGRAMS/PROJECTS

CONSOLIDATED EDISON COMPANY OF NEW YORK, INC. 2017-2019 GAS CAPITAL PROGRAMS		Year Total Current Budget Total Dollars ($000)		
Project/Program Description	**Category Code**	**RY1**	**RY2**	**RY3**
Distribution System Improvement Programs				
Main Replacement Program				
Replace Corroded Steel Mains	Risk Reduction	$ 98,319	$ 106,685	$ 121,291
Replace Cast Iron Mains	Risk Reduction	$ 151,739	$ 165,980	$ 180,150
Cathodic Protection Steel Mains	Risk Reduction	$ 1,261	$ 1,284	$ 1,284
	Sub-Total	**$ 251,320**	**$ 273,949**	**$ 302,725**
Distribution Supply Main Program				
Winter Load Relief	Risk Reduction	$ 17,163	$ 17,513	$ 17,491
Supply Main Planned Reinforcement (CONFIDENTIAL*)	Risk Reduction	$ 5,558	$ 6,767	$ 6,813
Gas System Vulnerability Elimination Program (CONFIDENTIAL*)	Risk Reduction	$ 11,113	$ 8,566	$ 14,943
Emerging Supply Mains Reliability	Risk Reduction	$ 4,041	$ 4,129	$ 4,123
Rehabilitate Large Diameter Gas Mains	Risk Reduction	$ 4,798	$ 4,902	$ 4,895
Replacement of Existing PE and Emergent Water Intrusion	Risk Reduction	$ 3,029	$ 3,094	$ 3,089
SM - Yorktown Upgrade	Risk Reduction	$ 1,011	$ 1,032	$ 1,031
Rehabilitation of the Gas Supply Main to City Island	Risk Reduction	$ -	$ -	$ 721
Second Supply to Roosevelt Island	Risk Reduction	$ 12,123	$ -	$ -
	Sub-Total	**$ 58,835**	**$ 46,003**	**$ 53,106**
Isolation Valve Installation Program				
Isolation Valves	Risk Reduction	**$ 5,051**	**$ 5,161**	**$ 5,153**
Service Replacement				
Services Associated With Main Work	Risk Reduction	$ 45,391	$ 49,254	$ 52,074
Services Without Curb Valves	Risk Reduction	$ 1,110	$ 1,134	$ 1,132
	Sub-Total	**$ 46,501**	**$ 50,388**	**$ 53,206**
Emergency Replacement of Services				
Leaking Services	Risk Reduction	$ 46,854	$ 47,990	$ 47,408
Distribution System Improvement Programs Total		**$ 408,561**	**$ 423,492**	**$ 461,597**
Transmission Programs and Projects				
Transmission Risk Reduction and Reliability Projects				
Remotely Operated Valves (ROVs)	Risk Reduction	$ 1,478	$ 1,977	$ 3,608
TG– Transmission Pipeline Integrity Main Replacement Program	Risk Reduction	$ 1,516	$ 3,098	$ 3,085
Transmission Main Leaks	Risk Reduction	$ 2,018	$ 2,058	$ 2,056
TG– St. Ann's Tee to Hunts Point Downgrade	Risk Reduction	$ 10,609	$ 7,742	$ -
TG– Yorktown Gate Station Refurbishment	Risk Reduction	$ -	$ 9,291	$ -
Newtown Creek Metering Station	Risk Reduction	$ 3,032	$ -	$ -
Cortlandt Gate Station Refurbishment	Risk Reduction	$ 9,093	$ -	$ -
Greenburgh Yard Refurbishment	Risk Reduction	$ 8,082	$ -	$ -
Westchester / Bronx Border to White Plains	Risk Reduction	$ 40,414	$ 41,292	$ 41,222
TG - Bronx River Tunnel to Bronx Westchester Border	Risk Reduction	$ 25,261	$ 25,810	$ 25,764
Bronx River Tunnel and Easement	Risk Reduction	$ -	$ 15,485	$ 12,368
Astoria Transmission Main Reinforcement OTG	Risk Reduction	$ 10,103	$ -	$ -
OTG Transmission Main Reinforcement	Risk Reduction	$ 11,821	$ 12,078	$ 7,214
Millennium - Lower Westchester Interconnect	System Expansion	$ -	$ -	$ 46,374
Iroquois-3rd Ward of Queens Interconnect	System Expansion	$ -	$ -	$ 15,458
Millennium Pipeline Distribution Regulator Stations (CONFIDENTIAL*)	System Expansion	$ -	$ -	$ 4,895
	Sub-Total	**$ 123,426**	**$ 118,830**	**$ 162,044**
Pressure Control				
PC - Water Proof Manholes	Risk Reduction	$ 100	$ 100	$ 100
PC - Replace Regulators, Valves & Strainer 2 and Larger	Risk Reduction	$ 500	$ 500	$ 500
PC - Unserviceable Equipment	Risk Reduction	$ 500	$ 500	$ 500
PC - Regulator Vent System Refurbishment	Risk Reduction	$ 456	$ 463	$ 462
PC - Uncoated Piping	Risk Reduction	$ 203	$ 206	$ 205
PC - Corroded Gauge Lines	Risk Reduction	$ 101	$ 103	$ 103
PC - Pressure Monitoring / Telemetrics	Risk Reduction	$ 500	$ 500	$ 500
PC - Gridboss / Automated Adaptive Controls	Risk Reduction	$ 650	$ 650	$ 650
	Sub-Total	**$ 3,010**	**$ 3,022**	**$ 3,020**
Transmission Programs and Projects Total		**$ 126,436**	**$ 121,852**	**$ 165,064**

* Will be distributed pursuant to a protective order

CONSOLIDATED EDISON COMPANY OF NEW YORK, INC. 2017-2019 GAS CAPITAL PROGRAMS		Year Total Current Budget Total Dollars ($000)		
Project/Program Description	**Category Code**	**RY1**	**RY2**	**RY3**
Security				
Tier 2 Security Improvements	Safety/Security	$ 1,011	$ 1,032	$ 1,031
Various Tunnel Properties - Security Improvements	Safety/Security	$ -	$ -	$ 310
Security Total		**$ 1,011**	**$ 1,032**	**$ 1,340**
Growth Related Programs and Projects				
OTG - #4/6 Conversions NYC	New Business	$ 36,845	$ 26,064	$ 24,406
OTG - #2 Oil Conversions NYC	New Business	$ 13,422	$ 13,234	$ 12,801
OTG - Westchester Area Growth	New Business	$ 10,102	$ 10,322	$ 10,306
OTG - Westchester Conversions	New Business	$ 17,590	$ 18,545	$ 19,684
New Business - Traditional	New Business	$ 51,904	$ 53,144	$ 53,410
OTG – Regulator Stations	New Business	$ 24,244	$ 21,669	$ 12,569
New Business - Regulator Stations	New Business	$ 7,072	$ 7,225	$ 7,208
Growth Related Programs and Projects Total		**$ 161,178**	**$ 150,204**	**$ 140,384**
Technical Operations				
Liquified Natural Gas (LNG)				
LNG - Purchase and Install Vaporizers 1 and 2	Replacement	$ 3,250	$ 1,700	$ 1,400
LNG - Liquefier Instrumentation	Replacement	$ -	$ -	$ 1,163
LNG - Purchase and Install Balance of Plant Instrumentation	Replacement	$ -	$ 1,360	$ -
LNG - Year Round Liquefier Operation	Replacement	$ 1,746	$ 440	$ -
LNG - Plant Boil-Off Compressor	Replacement	$ -	$ -	$ 750
LNG - Plant Motor Control Center	Replacement	$ -	$ 1,100	$ 900
LNG - Plant Regeneration Skid	Replacement	$ -	$ -	$ 1,300
LNG - Rebuild Turbines 601 and 626	Replacement	$ 450	$ 216	$ 223
LNG - Reconditioning of Plant Structures	Replacement	$ 845	$ -	$ -
LNG Plant- Replacement of Dry Chemical Fire Suppression System Zones 5 & 6A	Replacement	$ 245	$ 400	$ -
	Sub-Total	**$ 6,536**	**$ 5,216**	**$ 5,736**
Tunnels				
Various Tunnel Properties - Steel Replacement Program	Replacement	$ -	$ 996	$ -
Ravenswood Tunnel - Electric Upgrade	Replacement	$ 1,323	$ -	$ -
Ravenswood Tunnel - NYF Gas Main Rollers	Replacement	$ 627	$ 918	$ 500
Ravenswood Tunnel - Feeder Supports	Replacement	$ 626	$ 918	$ 500
Bronx River Tunnel - Hoistway	Replacement	$ 96	$ -	$ -
Flushing Tunnel - Hoistway	Replacement	$ 96	$ -	$ -
Ravenswood Tunnel - Hoistway	Replacement	$ -	$ -	$ 100
Hudson Avenue Tunnel - Oil Minder	Replacement	$ -	$ -	$ 35
Ravenswood Tunnel - Oil Minder	Replacement	$ -	$ -	$ 35
Various Tunnel Properties – Sump Pumps	Replacement	$ -	$ 75	$ -
Various Tunnel Properties - Upgrade Cable Radio Systems	Replacement	$ -	$ -	$ 926
Various Tunnel Properties - Asphalt Paving	Replacement	$ -	$ -	$ 81
First Ave. Tunnel - Flash Tank Replacement	Replacement	$ -	$ -	$ 500
Hudson Avenue Tunnel - Flow Meter	Replacement	$ -	$ -	$ 65
	Sub-Total	**$ 2,768**	**$ 2,907**	**$ 2,742**
Meters				
Meter Purchases - New Business and Program Replacements	Equipment Purchases	$ 9,577	$ 9,521	$ 9,600
Meter Purchases - #4/6 Oil-to-Gas	Equipment Purchases	$ 2,100	$ 1,800	$ 1,500
Meter Installations – New Business and Program Replacements	New Business	$ 16,378	$ 16,481	$ 16,495
Meter Installations – #4/6 Oil-to-Gas	New Business	$ 852	$ 743	$ 590
	Sub-Total	**$ 28,907**	**$ 28,545**	**$ 28,185**
Picarro Leak Detection Equipment	Information Technology	$ 1,200	$ -	$ -
Technical Operations Total		**$ 39,412**	**$ 36,668**	**$ 36,663**
Gas Work and Asset Management System Total		**$ 21,929**	**$ 27,149**	**$ 32,715**
Municipal Infrastructure Total		**$ 82,365**	**$ 82,055**	**$ 79,860**
Grand Total		**$ 840,892**	**$ 842,452**	**$ 917,622**

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1. DISTRIBUTION SYSTEM IMPROVEMENT PROGRAMS

MAIN REPLACEMENT PROGRAM:

X	Capital
	O&M

2016 – Gas Operations

Project/Program Title	Replace Corroded Steel Mains
Project Manager	John Ciallella
Hyperion Project Number	7GD1824, 7GD3184, 7GD4184, 7GD5184, 21533583
Organization's Project Number	GD-4
Status of Project	Ongoing Program
Estimated Start Date	Ongoing
Estimated Completion Date	Ongoing
Work Plan Category	Operationally Required – Critical Repair

Work Description:

GD-4 is the capital replacement of small diameter corroded and leaking steel gas mains.

- Mandatory: This is part of the replacement of miles of total leak prone gas main over the three-year period, which is a PSC 17-19 rate case mandate.
- High-level schedule: On-going program
- Starting in 2017, targeted replacement of small diameter unprotected steel gas mains within FEMA flood zones will be incorporated into this program. The replacement of unprotected steel pipe with new plastic or protected steel will reduce the likelihood of water infiltration and gas service outages during a flood event.

Justification Summary:

Unprotected steel mains account for approximately 25 percent of the gas system materials. A large percentage of incoming gas leaks are linked to corroded steel gas mains. The GD-4 replacement program addresses this concern by replacing corroded steel mains with plastic and/or protected steel mains. Main segments are identified for replacement by the gas mains replacement prioritization model that prioritizes the gas main segments by condition and risk. This program mitigates the Enterprise Risk Management category of Gas Distribution system events by replacing the mains which have been assigned the highest condition scores, thereby lowering the probability of future leaks and repairs. This program is a rate case performance indicator, a corporate modifier, and KPI.

Supplemental Information:

- Alternatives: None.

- Risk of No Action: This is a rate case performance indicator and therefore a penalty will be assessed for failing to meet the target.

- Non-financial Benefits: The elimination of leak prone pipe has a direct impact on our Sustainability Strategy objective to continue to reduce methane emissions from the gas distribution system.

- Summary of Financial Benefits (if applicable) and Costs: The replacement of leak prone pipe will improve the reliability of the gas system by eliminating mains which have been identified as leak prone. Some targeted mains contain active leaks, and their replacement will directly reduce the leak backlog. The replacement of the leak prone pipe will also result in future O&M leak cost avoidance for leak investigation and repairs.

- Technical Evaluation/Analysis: The GD-4 program has a direct impact on several KPI's, specifically the replacement of leak prone gas mains as well as the reduction of the leak backlog. This program will help reduce the probability that a crack/break will cause an incident.

- Project Relationships (if applicable): Leak prone pipe replacement is comprised of GD-4, and GD-11 main replacements.

- Basis for Estimate: Historical Unit Cost

Total Funding Level ($000):

Historical Spend

Actual 2011	**Actual 2012**	**Actual 2013**	**Actual 2014**	**Historic Year** (O&M only)	**Forecast 2015**
$43.097	$39,586	$35,418	$50,955		

Historical Elements of Expense

(Historical EOE breakout will only be completed for Steam projects/programs of $500 thousand or more and, for all other organizations, projects/programs of $1million or more.)

EOE	**Actual 2011**	**Actual 2012**	**Actual 2013**	**Actual 2014**	**Historic Year** (O&M only)	**Forecast 2015**
Labor	$8858	$7,009	$5,711	$5,257		
M&S	$1570	$1,046	$591	$2,643		
A/P	$14885	$12,581	$16,225	$27,860		
Other	$1367	$2,399	$400	$485		
Total	**$26,680**	**23,035**	**22,927**	**36,245**		

Request ($000):

Request 2016	Request 2017	Request 2018	Request 2019	Request 2020
$77,403	$98,319	$106,685	$121,290	$141,636

Request by Elements of Expense

EOE	2016	2017	2018	2019	2020
Labor	$8,579	$11,619	$12,324	$13,681	$13,811
M&S	$4,019	$5,173	$5,503	$6,586	$6,818
A/P	$37,282	$45,219	$48,530	$57,159	$71,606
Other	$5,638	$6,808	$7,069	$8,064	$9,646
Overheads	$21,885	$29,500	$33,259	$35,800	$39,755
Total	**$77,403**	**$98,319**	**$106,685**	**$121,290**	**$141,636**

X	Capital
	O&M

2016 – Gas Operations

Project/Program Title	Replace Cast Iron Mains
Project Manager	John Ciallella
Project Number	1GD1220, 7GD0054, 7GD0064, 7GD0074, 7GD0084
Organization's Project Number	GD-11
Status of Project	Ongoing Program
Estimated Start Date	Ongoing
Estimated Completion Date	Ongoing
Work Plan Category	Operationally Required – Critical Repair

Work Description:

Replacement of small diameter cast iron gas mains that are prone to leakage.

- Mandatory: This is part of the replacement miles of total leak prone gas main in a three-year period, which is a PSC 17-19 rate case mandate. In any given calendar year, a minimum of 25 miles of cast iron per year must be eliminated.
- High-level schedule: On-going program
- Starting in 2017, targeted replacement of small diameter cast iron gas mains within FEMA flood zones will be incorporated into this program. The replacement of cast iron pipe with new plastic or protected steel will reduce the likelihood of water infiltration and gas service outages during a flood event.
- Included in the cast iron gas main category are wrought iron gas mains. These mains will also be replaced under this program.

Justification Summary:

This program covers the annual replacement of small diameter cast iron pipe. The gas system currently has over 5 million feet of small diameter cast iron pipe. History has shown that these mains are more prone to breakage due to their low beam strength. In order to plan for increased gas usage and establish a replacement program, small diameter piping is scheduled for replacement based on priority identified by our main replacement prioritization model. Where necessary replacement pipe size is increased for future needs. This project addresses Enterprise Risk Management (ERM) categories for Gas Distribution system events or Water Main Breaks. This program is a performance indicator under the current rate plan, a corporate modifier, and a Key Performance Indicator (KPI).

Supplemental Information:

- Alternatives: None.

- Risk of No Action: This is a rate case performance indicator and therefore a penalty will be assessed for failing to meet the target.

- Non-financial Benefits: The elimination of leak prone pipe has a direct impact on our Principle Sustainability Strategy to continue to reduce the methane emissions from the gas distribution system.

- Summary of Financial Benefits (if applicable) and Costs: The replacement of leak prone pipe will improve the reliability of the gas system by eliminating mains which have been identified as leak prone. Some targeted mains contain active leaks, and their replacement will directly reduce the leak backlog. The replacement also results in future O&M leak cost avoidance for leak investigation and repairs.

- Technical Evaluation/Analysis: This program has a direct impact on several KPI's, specifically the replacement of leak prone gas mains as well as the reduction of the leak backlog. This program will help reduce the probability that a crack/break will cause an incident.

- Project Relationships (if applicable): Leak prone pipe replacement is comprised of GD-4, and GD-11 main replacements.

- Basis for Estimate: Historical Unit Cost

Total Funding Level ($000):

Historical Spend

Actual 2011	**Actual 2012**	**Actual 2013**	**Actual 2014**	**Historic Year** (O&M only)	**Forecast 2015**
$23,507	**$42,829**	**$43,328**	**$50,391**		

Historical Elements of Expense

(Historical EOE breakout will only be completed for Steam projects/programs of $500 thousand or more and, for all other organizations, projects/programs of $1million or more.)

EOE	**Actual 2011**	**Actual 2012**	**Actual 2013**	**Actual 2014**	**Historic Year** (O&M only)	**Forecast 2015**
Labor	3264	4,930	4,034	2,882		
M&S	882	858	1,199	3,851		
A/P	10214	17,596	23,537	28,878		
Other	945	3,032	716	869		
Total	**15,305**	**26416**	**29486**	**36480**		

Request ($000):

Request 2016	Request 2017	Request 2018	Request 2019	Request 2020
$70,608	$151,739	$165,980	$180,149	$202,703

Request by Elements of Expense

EOE	2016	2017	2018	2019	2020
Labor	$5,323	$14,608	$15,311	$16,726	$18,913
M&S	$2,836	$6,995	$7,419	$8,988	$9,776
A/P	$38,498	$75,241	$81,863	$90,080	$102,908
Other	$5,353	$11,360	$11,724	$12,803	$14,487
Overheads	$18,598	$43,535	$49,663	$51,552	$56,619
Total	**$70,608**	**$151,739**	**$165,980**	**$180,149**	**$202,703**

X	Capital
	O&M

2016 – Gas Operations

Project/Program Title	Cathodic Protection Steel Mains
Project Manager	Various
Hyperion Project Number	1GD0005, 2GD0005, 6GD1825, 7GD1855
Organization's Project Number	GD-5
Status of Project	Ongoing Program
Estimated Start Date	Ongoing
Estimated Completion Date	Ongoing
Work Plan Category	Strategic

Work Description:

Install cathodic protection on coated unprotected steel gas mains and services.

Justification Summary:

This is a life extension program in which we are able to capitalize the installation cost of cathodic protection on coated unprotected steel mains. The installation of cathodic protection on larger diameter steel gas mains allows the useful life of the existing gas main to be extended and delays the replacement of larger diameter steel gas mains that are found to be in sound condition. Extending the lives of sound steel gas mains will allow replacement efforts to be focused on gas mains that have experienced prior failures and are prioritized for replacement.

Supplemental Information:

- Alternatives: The replacement of the unprotected steel gas mains. However, cathodically protecting larger diameter steel gas mains which are found to be in sound condition will extend their useful life.

- Risk of No Action: Failure to take action to either cathodically protect gas mains or replace unprotected steel gas mains with plastic will result in the accelerated deterioration of the existing gas mains due to corrosion. This will result in future O&M leak repairs, safety risk to the public for leaks on unprotected steel gas mains, and the future need for the costly replacement of corroded gas mains.

- Non-financial Benefits: Cathodic protection will reduce future leaks due to corrosion and improve the reliability of the gas system. In addition, protecting existing steel gas mains will have a direct impact on our Sustainability Strategy to continue to reduce the methane emissions from the gas distribution system.

- Summary of Financial Benefits (if applicable) and Costs: The installation of cathodic protection on existing gas mains consists of a small excavation every 500 feet, followed by the installation of a test station and two to four 32 pound anodes. The cost of replacing gas main ranges from $300 to $1000 per foot based on size of the main and operating area as well as other factors. The cost of installing a test station and anodes every 500 feet will extend the useful life of the main while

saving the cost of trenching and installing 500 feet of new gas main, which could result in a cost of $150-500K per 500 foot section.

- Technical Evaluation/Analysis: N/A

- Project Relationships (if applicable): Cathodic protection is done in lieu of replacement of the steel gas main program, which is the program listed within (GD-4).

- Basis for Estimate: Funding request is based on 2013 capital spending levels.

Total Funding Level ($000):

Historical Spend

Actual 2011	Actual 2012	Actual 2013	Actual 2014	Historic Year (O&M only)	Forecast 2015
$2,463	$677	$1,284	$1,620		

Historical Elements of Expense

	Actual 2011	Actual 2012	Actual 2013	Actual 2014
Overheads	$ 675	$75	$376	$394
A/P	$1060	$0	$0	$0
Labor	$ 351	$186	$426	$576
M&S	$ 260	$138	$0	$0
Other	$ 117	$278	$482	$650
Total	$ **2,463**	**$677**	**$1,284**	**$1,620**

Request ($000):

Budget 2015	Request 2016	Request 2017	Request 2018	Request 2019	Request 2020
$374	$1,250	$1,261	$1,284	$1,284	$1,287

Request by Elements of Expense:

EOE	2015	2016	2017	2018	2019	2020
Labor	$104	$440	$449	$458	$484	$499
M&S	$38	$52	$52	$52	$52	$52
A/P	$67	$145	$144	$144	$148	$151
Other	$9	$96	$96	$96	$96	$96
Overheads	$156	$517	$520	$534	$504	$489
Total	**$374**	**$1,250**	**$1,261**	**$1,284**	**$1,284**	**$1,287**

DISTRIBUTION SUPPLY MAIN PROGRAM:

X	Capital
	O&M

2016 – Gas Operations

Project/Program Title	Winter Load Relief
Project Manager	Carlos Yepez
Hyperion Project Number	7GD4091, 7GD7211, 7GD8041, 7GD8841, 20953702
Organization's Project Number	N/A
Status of Project	Ongoing Program
Estimated Start Date	Ongoing
Estimated Completion Date	Ongoing
Work Plan Category	Operationally Required- System Capacity

Work Description:

This project includes the installation and replacement of gas mains for system reinforcement in areas where pressures do not meet the current design criteria on a design hour based on the prior winter's system performance.

The winter load relief projects are associated with traditional new business and reinforcement associated with #4/#6 oil-to-gas conversion system load relief work.

The PSC Code (NYCRR 255.623) and CE procedural (G-8051, Gas System Design Criteria) requirements are:

- Each operator shall maintain a pressure throughout its low pressure distribution systems at no less than 4" w.c. shall not more than 12" w.c. as measured at the customer's end of service.
- The maximum pressure variation at any point on the system shall not be greater than 50% of the maximum pressure on that day. (Part 255.623).
- As per G-8051 (System Design Criteria), supply mains shall be designed to maintain system pressures as per the "Operating Pressure Guidelines" issued by the Gas Distribution Engineering Planning Section. These guidelines are intended to reduce operating system pressures and, in turn, reduce incoming leaks in the distribution system. Additionally, the HP supply pressure to any medium or low pressure regulating station shall not be lower than 25 psig.
- The optimal pressure range at the outlet of a medium pressure regulating station shall be 7 psig to 13 psig. (G-8051).
- The minimum pressure at extremity points on a medium pressure system shall not be lower than 2 psig. (G-8051).
- The MP supply pressure to any low pressure regulating station shall not be lower than 5 psig.(G-8051)

Justification Summary:

Gas Distribution Planning is responsible for analyzing the gas distribution system using the Synergi® network model. Each year, these models are updated to include newly installed facilities and added system loads to replicate actual system conditions for the coldest day of the season. Once calibrated, gas engineers look for areas of our gas distribution systems that do not meet the pressure requirements of the current

design criteria (G-8051) and PSC code requirements on a design peak hour. System reinforcement is then recommended for these areas to increase pressures to meet these requirements.

Supplemental Information:

- Alternatives: In cases where main reinforcement is recommended, the required footages were selected to maximize the system benefits. Alternatives with shorter required footages either did not provide the required benefit, or were not feasible therefore there are no other viable alternatives. In all cases, a comparative analysis was performed or consideration was given to see if the installation of a regulator station provided a better alternate when considering capital expenditures and resulting system benefit.

- Risk of No Action: If no action is taken, the system low-points and downstream regulator inlet pressures identified are predicted to fall below the requirements stated above. This could lead to the possibly of customer outages on the coldest winter days.

- Non-financial Benefits: This program will support reducing the risk of a distribution event. It will also support the continued reliability and availability of the gas system.

- Summary of Financial Benefits (if applicable) and Costs: N/A

- Technical Evaluation/Analysis: Locations are identified where the gas network analysis model predicts conditions of lower than required system performance, along with the predicted benefit after the recommended reinforcement is completed.

- Project Relationships (if applicable): Winter load relief projects have been recommended in the Manhattan, Bronx, Queens, and Westchester.

- Basis for Estimate: Historical Unit Cost

Total Funding Level ($000):

Historical Spend

Actual 2011	Actual 2012	Actual 2013	Actual 2014	Historic Year (O&M only)	Forecast 2015
$16,722	$18,731	$17,226	$19,837		$14,302

Historical Elements of Expense

(Historical EOE breakout will only be completed for Steam projects/programs of $500 thousand or more and, for all other organizations, projects/programs of $1 million or more.)

EOE	Actual 2011	Actual 2012	Actual 2013	Actual 2014	Historic Year (O&M only)	Forecast 2015
Labor	$3,526	$3,625	$1,349	$1,751		$2,253
M&S	$968	$1,042	$304	$1,332		$791
A/P	$5,491	$6,528	$10,007	$10,319		$5,686
Other	$2,306	$2,376	$200	$266		$571
Indirect	$4,431	$5,160	$5,366	$6,169		$5,001
Total	**$16,722**	**$18,731**	**$17,227**	**$19,837**		**$14,302**

Request ($000):

Request 2016	Request 2017	Request 2018	Request 2019	Request 2020
$18,999	$17,162	$17,512	$17,491	$17,537

Request by Elements of Expense

EOE	2016	2017	2018	2019	2020
Labor	$2,563	$3,215	$3,257	$3,379	$3,453
M&S	$1,187	$1,188	$1,188	$1,190	$1,194
A/P	$8,688	$6,379	$6,377	$6,465	$6,496
Other	$956	$711	$739	$808	$887
Overheads	$5,605	$5,669	$5,951	$5,649	$5,507
Total	**$18,999**	**$17,162**	**$17,512**	**$17,491**	**$17,537**

X	Capital
	O&M

2017– Gas Operations

Project/Program Title	Supply Main Planned Reinforcement
Project Manager	John Ciallella
Hyperion Project Number	21573114
Organization's Project Number	N/A
Status of Project	On-going
Estimated Start Date	2017
Estimated Completion Date	Ongoing
Work Plan Category	Operationally Required

Work Description:
Con Edison's gas distribution system consists of more than 4,200 miles of mains in Manhattan, the Bronx, Queens, and Westchester. Within this total are key gas mains and distribution regulator stations that represent approximately 650 miles of critical facilities known as "Distribution Supply Mains" or "Supply Mains." These mains are the "backbone" pipes that transport gas to major load pockets and/or other regulator stations that feed lower-pressure areas. In many cases, these Supply Mains represent single sources of supply into distribution areas that have no backup contingency in the event of a damage or leak that requires the full shutdown of the Supply Main and which could result in customer outages.

Most of these Distribution Supply Mains are large-diameter (*i.e.*, 8" through 30") and are located under major roadways. Because of the significant time and expense associated with replacing these facilities, we segregate these projects from smaller-diameter distribution main replacements and then prioritize them in a manner that results in the maximum cost-benefit possible in terms of safety and system reliability. The supply main programs can be divided into two distinct categories; replacement of undersized and/or unprotected steel leak-prone gas mains or the installation of new gas main to reinforce the reliability and availability of the gas in our service territory.

This program consists of identifying large diameter leak-prone undersized supply main segments for replacement. These segments will be re-evaluated on an annual basis to select the most leak prone sections based on the Main Replacement Program (MRP) score, leak repairs and existing leaks. Replacement of corroded sections of the Union Turnpike supply main is included in our Supply System Master Plan.

Justification Summary:

Queens
Replacement of Corroded Union Turnpike Mains
This supply main consists of corroded sections of High Pressure (HP) steel supply main on Union Turnpike in Queens. The 10" steel supply main along Union Turnpike is bare steel and susceptible to leakage. Since this main is the primary feed to Bellerose and Glen Oaks, Queens, it has been identified for replacement to improve system pressures to an isolated region as well as proactively replace leak prone pipe.

This is a multi-year project to replace the corroded 10" bare steel supply main with 12" PE on Union Turnpike feeding the Bellerose and Glen Oaks areas in the Third Ward of Queens.

In 2017, a 600 foot section of 10" 1947 corroded bare steel main will be replaced with 12" Polyethylene (PE)along Union Turnpike between 214th Street and Bell Blvd. This section of main scored highly on the MRP and also has two existing type 3 leaks.

In 2018, a 520 foot section of corroded 1947 8" steel main will be replaced with 12" PE also on Union Turnpike between 262nd and 265th Street. This main crosses in front of a church and a synagogue and was selected for replacement by MRP

In 2019, we plan to replace an 800 foot section of corroded 1947 and 1948 8" bare steel supply main with 12" PE between 265th St and 268th St. The MRP model was used to select this segment which is ranked highly for replacement.

These segments will be re-evaluated on an annual basis to select the most leak prone sections based on the MRP score, leak repairs and existing leaks. Replacement of corroded sections of the Union Turnpike supply main is included in our Supply System Master Plan.

Replacement of the Astoria – Flushing Main

The 24 inch Astoria-Flushing Main runs 6.5 miles and is an unprotected steel pipeline, most of which was installed in the 1920's. It supplies two (2) high to low-pressure regulator stations in Astoria and is one of the primary feeds to the high-pressure mains system in the Queens' Third Ward, serving as a back-up for eastern Queens should a contingency arise and the transmission main feed running parallel to the high pressure main is lost.

This is a multiyear program to rehabilitate sections of the Astoria-Flushing HP main, which has a history of corrosion and leakage. Approximately 2,600 feet of the main has already been lined using both Starline Cured in Place liner and Subline trenchless technology. Future sections of this main will continue to utilize these rehabilitation technologies.

For 2017, we plan to rehabilitate 900 feet of 1928 24" steel along 20th Avenue between 19th and 23rd Street.

For 2018, we plan to rehabilitate approximately 950 feet of 24" steel along Northern Boulevard between 77th Street and 81st Street. This section was installed in 1929.

For 2019, we plan to rehabilitate 500 feet of 1928 24" steel along 23rd Avenue between 42nd and 45th Street.

For 2020, we plan to rehabilitate approximately 1,000 feet of main installed in 1929 utilizing the Starline method. This is a section of main along N. Boulevard between Jackson Mill Road and 99th Street.

Westchester

Replacement of Supply Mains from Greenburgh to Hawthorne

The Greenburgh-Hawthorne high pressure system is 12.8 miles of main. It includes 7.4 miles of unprotected steel, the majority of which is 8 inch steel installed in the 1920s and 1960s. The Greenburgh to Hawthorne main supplies lower pressure distribution systems through three low pressure and one medium pressure regulator stations as well as 1,600 high pressure customers directly. The gas network analysis model has also identified the need to increase system capacity to avoid thousands of customer outages in Northern Westchester in the event the parallel transmission main supplied from Tennessee's Knollwood Road gate station is curtailed or interrupted.

For 2017, the Company plans to replace 1,250 feet of 1928 8" bare steel along Bradhurst Avenue from Lisa Lane to north of Lake View Ave. This section of main has 20 repair clamps and one active type 3 leak.

For 2018, the Company plans to replace 2,000 feet of 1928 8" bare steel with 12" PE along Bradhurst Avenue from Lakeview Avenue to Valve 22993.

For 2019, the Company plans to replace 1,450 feet of 1928 8" bare steel with 12" PE along Bradhurst Avenue from the service to the Margaret Chapman School to the service feeding the Westchester Medical Center. This section has three leak repair clamps.

For 2020, the Company plans to replace 1,100 feet of mostly 1928 8" bare steel with 12" PE along Bradhurst Avenue between Stevens Avenue and Bldg. #128.

Replace Saw Mill Greenburgh Main

The Sawmill-Greenburgh high pressure system is 16.1 miles of main (15.3 miles of unprotected main), the majority of which is 8 and 10 inch steel installed in the 1920's, and 0.8 miles of cathodically protected main of various sizes and ages.

The Saw Mill to Greenburgh main supplies low and medium pressure distribution systems through nine Low Pressure (LP) and one Medium Pressure (MP) regulator stations. It also supplies HP to the Scarsdale system and 10,000 high pressure customers. It is supplied by the Pelham-Sawmill system in the south, by regulator station GR-519 at Greenburgh, and by regulator station GR-476 in Yonkers from the east. Loss of service along this main due to a major leak could lead to customer outages during the winter heating season.

In 2017, we plan to replace 900 feet of 10" HP steel installed in 1922 (and also abandon 800 feet of LP 6" CI) with 12" HP PE along Fortfield Ave. from Gavin Street and Briggs Ave. This section was selected because it has 11 existing repairs, all being made within the past 10 years, one active type 3 leak and will also improve the supply and backup capability between GR-519 and GR-476.

In 2018, we plan to replace 900 feet of 8" and 10" bare steel main installed in 1926 with 12" HP PE along Palmer Road from Mitchell Ave to Mile Square Road in Yonkers. This section has two repairs, both being made within the past year, and four active leaks.

In 2018, we plan to replace 1,000 feet of 8" HP bare steel installed mostly between 1925 and 1933 with 12" HP PE along Central Park Avenue from valve #21807 north towards Ardsley Road in Greenburgh. This section has eight leak repairs, with two being made within the past five years, and a drip with small diameter siphon piping that is prone to leaks and contractor damage

In 2019, we plan to replace 1,700 feet of 10" bare steel installed in 1926 with 12" HP PE from Saw Mill River Rd along Roosevelt Street, Clarendon Avenue and Fortfield Avenue to valve # 36167 in Yonkers. This section has six leak repairs, with two being made within the past five years, and one active type 3 leak.

In 2020, we plan to replace 1,000 feet of 8" bare steel main installed in 1925 with 12" HP PE along Landers Road from # 293 Hartsdale Rd to West Downing Road in Greenburgh. This section has four leak repairs, with two being made within the past five years.

In 2020, we plan to replace 1,700 feet of 8" bare steel installed in 1925 with 12" HP PE from valve # 52827 to valve # 21949 on West Hartsdale Rd in Greenburgh. This section has six prior leak repairs, a drip pot with riser pipes and a stub service connection. This section of main also has had prior leaks requiring main replacements in earlier years.

Replace Saw Mill Elmsford Main

The Sawmill-Elmsford high pressure system is 12.8 miles of main (11.3 miles of unprotected steel), the majority of which is 10 inch steel installed in the 1930's, and 1.5 miles of cathodically protected main of various sizes and age.

The Saw Mill to Elmsford HP system supplies lower pressure distribution systems through three low pressure and two medium pressure regulator stations as well as 3,800 high pressure customers. It is supplied by the Pelham-Sawmill system from the south and the Greenburgh - Elmsford system from the north. Of the 11.3 miles of unprotected main, 3,200 feet is 6 and 8 inch bare steel of 1930's vintage or earlier. Loss of service along this main due to a major leak could lead to customer outages during the winter heating season.

In 2017, we plan to rehabilitate approximately 1,250 feet of 1931 10" bare steel main along Saw Mill River Road between Valve 21280 and Lawrence Street in Greenburgh. This main has 11 leak repairs, with four being made in the past five years, and four active type 3 leaks.

In 2018, we plan to rehabilitate 1,400 feet of 1931 10" bare steel main along Saw Mill River Road from valve # 21218 to the 1987 steel main located north of Lawrence Street. This main has 19 leak repairs, 15 being made within the past 10 years, and three drips with small diameter riser pipes that are prone to leakage and contractor damage.

In 2019, we plan to rehabilitate 1,200 feet of 1931 10" bare steel main along Saw Mill River Road from Barney Street towards Holly Place. This main has six repairs, all being made within the past 10 years, and an active type 2 leak.

In 2020 we plan to replace 500 feet of 10" 1931 bare steel main along Saw Mill River Road from valve # 21280 to the drip located near building #420 Saw Mill River Road. This section of main has three leak repairs, all being made within the past three years, and one drip with small diameter riser pipes that are prone to leakage and contractor damage.

In 2020 we plan to replace 400 feet of 1931 10" bare steel main with 12" PE along Saw Mill River Road from valve # 21220 to Ridge Road. This section of main has three leak repairs, all being made within the past two years, and one active type 3 leak.

Westchester Medium Pressure Inner / Outer Loop

This project includes upgrades to the Westchester Medium Pressure Inner and Outer Loops. Through 2010 we have installed 3,200 ft. of 12" main tie along Sunny Ridge Rd between North St. and Union Avenues in the Town of Harrison. The project also includes improvements to the Inner and Outer Loop Systems by adding 2,200 feet of main ties and systems improvements including a new regulator station.

The Westchester MP Outer Loop serves lower Westchester and operates at 15 psig Maximum Allowable Operating Pressure (MAOP). Currently on cold winter days, the MP Outer Loop System needs to operate at nearly its maximum pressure of 15 psig to maintain the minimum required system low-point and LP regulator inlet pressures. The design requirements are:

The minimum pressure at system low-points feeding customers shall not be lower than 2 psig. (G-8051, Gas System Design Criteria)

The supply pressure to any low pressure district regulating station shall not be lower than 5 psig. (G-8051, Gas System Design Criteria)

In addition, PSC Code and CE procedures, respectively, require that:

The maximum pressure variation at any point on the system shall not be greater than 50 percent of the maximum pressure on that day. (Part 255.623)

The optimal pressure range at the outlet of a regulating station shall be 7 psig to 13 psig. (G-8051)

Winfield Avenue Inner/Outer Loop Tie in Harrison and new regulator station

This project will install 2,600 ft. of 8" PE along Winfield Avenue between Union Avenue and Glen Drive in Harrison. This job will be completed in 2018 (1,300 feet) and 2019 (1,300 feet), and will result in added system reliability by tying the MP Inner and Outer Loops (including the long Inner Loop radial along Winfield Avenue – approximately 900 customers), improved system pressures, and allow for the operation of MP district regulators in the Harrison area at 13 psig. A proposed new regulator station, location to be determined, would further improve/reduce operating pressures.

These projects will also reduce the potential cost of customer outages due to inadequate system low-point and LP regulator inlet pressures. Avoided leaks on leak prone pipe replaced along Sunny Ridge Road and the reduced likelihood of customer outages will also result in improved customer satisfaction, and better community and regulatory relations.

Replacement of Supply Mains from Hawthorne to Peekskill

The Hawthorne – Peekskill main is an 82,000 foot section of main that supplies high-pressure gas from the outlet of GR-484 in Hawthorne and the outlet of GR-673 (Algonquin Gate Station) in Peekskill to high-pressure systems in Briarcliff, Croton, Ossining & Peekskill.

The Hawthorne to Peekskill main supplies lower pressure distribution systems through seven low pressure, one medium pressure, and two intermediate pressure district regulator stations as well as 13,000 high pressure customers. At temperatures lower than 40 degrees F, a loss of one of its two supplies could result in thousands of customer outages due to the extensive amount of restrictive 6" and 8" diameter pipe between Peekskill and Hawthorne. This restrictive main is mostly bare steel installed in the 1920's and 30's. Replacement of these sections will result in improved capacity and the removal of the most leak prone sections of bare steel pipe.

For 2017, we plan to replace 600 feet of 1931 8" bare steel main with 12" PE along N. Riverside Ave from Scenic Drive north towards valve 22856. This section has six prior repair clamps and was recommended for replacement in 2015 by MRP.

For 2018, we plan to replace 1,100 feet of 1931 8" bare steel main with 12" PE along Albany Post Road from Baltic Place to 1964 steel that terminates at the IJ north of Furnace Dock Rd. This section has 31 prior repair clamps, two active leaks, and was recommended for replacement in 2015 by MRP.

For 2019, we plan to replace 1,000 feet of 1931 8" bare steel main with 12" PE along South State Road and Elm Road between 55 Pine Road and the intersection of Elm Road and Pine Road. This section has ten prior repair clamps and was recommended for replacement in 2015 by MRP.

For 2020, we plan to replace 1,000 feet of 1928 6" bare steel with 12" PE along Snowden Avenue between North Water Street and Van Wyck Street. This section has seven leak repair clamps and one active type 3 leak.

For 2020, we plan to replace 800 feet of 1931 8" bare steel main with 12" PE along South State Rd. from Long Hill Rd north the 1962 vintage steel main in front of #340 South State Rd. This section has four prior repair clamps and was recommended for replacement in 2015 by MRP.

Replacement of Supply Mains from Hawthorne to Katonah

The Hawthorne-Katonah high pressure system is 27.3 miles of main – 17.7 miles of unprotected main, the majority of which is 6 and 8 inch steel installed in the 1920s, and 9.6 miles of protected main of various size and age. It supplies approximately 11,000 high pressure customers. It is supplied by GR-484 in Hawthorne and is tied to the Greenburgh-Hawthorne and Yorktown-Katonah high pressure systems.

Additionally, gas system network analysis has identified this as a virtual radial (zero contingency) system at temperatures lower than 30 degrees F. At this temperature a loss of one of its two supplies will result in thousands of customer outages. This region is also experiencing new construction and oil conversion gas heating growth that increases the cold weather peak gas load, further taxing the system. The remedy is to increase system capacity by replacing 6" and 8" steel main with larger diameter 12 inch pipe.

In 2017, 1,200 feet of 8" steel on Bedford Road between Orchard Ridge Road and Shadow Brook Parkway will be replaced with 12" plastic. This segment has 18 repairs and five Type-3 leaks. Also in the same year, 1,000 feet of 8" bare steel will be replaced with 12" plastic along Bedford Road between Apple Hill Road and 16 Bedford Road. This 1,000-ft segment includes 15 repairs and two Type-3 leaks.

In 2018, 1350 feet of 8" steel on North Moger Avenue between Main Street and Carpenter Avenue will be replaced with 12" plastic. This section currently has eight repairs.

In 2019, 390 feet of 8" steel will be replaced with 12" plastic along Bedford Road between North Way and 399 Bedford Road (near valve #22269). This segment has five repairs and one Type-3 leak. In the same year, 475 feet of 8" bare steel on Bedford Road between Whippoorwill Road and 416 Bedford Road will also be replaced with 12" plastic pipe. This segment includes three repairs and one Type-3 leak.

In 2020, 700 feet of 8" steel on Lexington Avenue between Main Street and Radio Circle will be replaced with 12" plastic. This section includes seven repairs.

Pelham to Saw Mill

The Pelham to Saw Mill high pressure mains system consists of approximately nine miles of 20 inch steel installed and replaced from the 1930s through the 1980s. The system supplies gas to more than 40,000 customers either directly or through 18 medium and low pressure regulator stations supplied from the high pressure system. It also supplies two other major supply mains, the Saw Mill-Greenburgh and Saw Mill-Elmsford systems that feed gas to tens of thousands of additional customers in the western section of Westchester County. In addition, one of the largest gas customers on our system is fed from this main, including Refined Sugars and several hospitals. The origin of the supply is in the eastern part of the system, Pelham/Mt Vernon area, where three large regulator stations, GR-419, GR-514, and GR-524, provide the majority of gas through sections of original 24 inch 1940s and 1950s vintage pipe. A second supply point is in the western part of the system, City of Yonkers, where a connection to the Bronx 20 inch high pressure mains system supplies gas from regulator GR-110.

There is corrosion repair history on the 24 inch 1940s vintage pipe in the Pelham/Mt Vernon area and the 20 inch 1930s vintage pipe in Yonkers, and a significant leak on this section could completely isolate supply to the system, putting gas supply to tens of thousands of customers at risk in the event of a supply contingency. In addition, the system resides in busy cities with significant road traffic, Yonkers and Mt Vernon, which receive heavy winter road salt application, significantly adding to the risk of steel corrosion.

Starting in 2017 and continuing until all early vintage pipe is replaced, we will prioritize based on MRP scores and system leak history, the replacement of short sections (approx. 300 feet) of the 24 inch and 20 inch mains to improve supply reliability.

Pelham to Rye

The Pelham to Rye high pressure mains system consists of approximately 12 miles of predominantly 20 inch steel installed and replaced from the 1940s through the 1980s. The system supplies gas to more than 50,000 customers either directly or through 24 medium and low pressure regulator stations supplied from the high pressure system. The origin of the supply is in the southern part of the system, Pelham/Mt Vernon area, where three large regulator stations, GR-419, GR-514, and GR-524, provide the majority of gas through the remaining sections of original 24 inch 1940s and 1950s vintage pipe. A second supply point is in the northern part of the system, City of Rye, where regulator GR-525 feeds into 1980's vintage pipe.

Both supply points are constrained by pipe capacity and cannot supply the entire system in the event of a loss of the other supply at temperatures below 20 deg F. On the 24 inch section of main there is corrosion repair history as well, and a significant leak on this section could completely isolate the southern supply from the system, putting gas supply to tens of thousands of customers at risk in the event of a supply contingency. In addition, the entire system resides in a busy traffic corridor, Boston Post Rd, which receives heavy winter road salt application, significantly adding to the risk of steel corrosion.

Starting in 2017 and continuing until all early vintage pipe is replaced, we will prioritize based on MRP scores and system leak history, the replacement of short sections (approx. 300 feet) of the 24 inch main in the southern area to improve supply reliability and increase system capacity.

Grasslands Rd Upgrade

Replacement of 9,000 ft. of existing 6 and 8 inch high pressure steel with 12" high pressure polyethylene gas main. Approximately 5,800 ft. has already been completed with the remaining footage to be completed in the upcoming years. The proposed replacements allow GR 519 to provide a backup supply to the Northern Westchester backbone system.

This section of the Northern Westchester high pressure (91 psig) gas system is fed from the Hawthorne regulator station (GR-484) in the north, and the Greenburgh Regulator Station (GR-519) in the south. The existing 6" HP (1929) steel gas mains limit the capacity of the Greenburgh Regulating Station to back up the Hawthorne Regulating Station during a system emergency. The existing 6" HP steel gas main installed in 1929 on Grasslands Road between the East Grasslands Gate of Westchester Community College, and the East Grasslands Gate of Westchester Community College, has eleven (11) existing repair clamps installed on this section and is called for replacement. In addition the existing piping is too small to provide supply from GR 519.

Scarsdale HP Main

The Scarsdale high pressure system is comprised of 11.5 miles of main predominantly 4" & 6" bare steel. It supplies the low and medium pressure distribution systems through two low pressure and two medium pressure regulator stations as well as 7,400 high pressure customers. It is supplied by regulator stations GR-425 and GR-510 in Scarsdale and by the Sawmill-Greenburgh System from the west.

During recent winters, GR-501 experienced pressures below 25 psig due to excessive pressure drop on the 4" main supplying this low pressure regulator station. This in turn caused lower than desired pressures on the low pressure distribution system in the area. Pipe segments identified for replacement were based on

the Main Replacement Program score, the number of leak repairs and the flow restrictions caused by small diameter main along the supply runs. Replacement of these segments will improve the inlet pressure to downstream LP and MP stations, proactively replace restrictive, small diameter bare steel pipe along these vital supply runs, and improve the back-up capability between supply stations GR-510 and GR-425.

For 2017, the Company plans to replace 1,200 feet of 1925 4" bare steel along White Plains Post Road between Grand Blvd. and Woodruff Ave. This segment of main has 31 leak repairs, with 13 repairs being made within the last five years. The replacement with 8" PE will eliminate 1,200 feet of 4" bare steel pipe and improve the backup capability between supply stations GR-510 and GR-425.

As per G-8051 (System Design Criteria), supply mains shall be designed to maintain system pressures in accordance with the "Operating Pressure Guidelines" issued by the Gas Engineering Planning Department. These guidelines are intended to reduce operating system pressures and, in turn, reduce incoming leaks in the distribution system. Additionally, the supply pressure to any medium or low pressure regulating station shall not be lower than 25 psig.

Based on the latest network analysis studies, which include pending new business load, the pressure to these stations is predicted to fall below 25 psig at the design peak hour. The completion of these HP supply main replacements in Scarsdale will address these concerns and raise the pressure to downstream regulators above the minimum required.

Port Chester Medium Pressure Replacement

The Port Chester-Rye medium pressure system consists of approximately 14.7 miles of steel and cast iron gas mains ranging in size from 2 through 12 inch diameter. This system feeds approximately 4,000 customers either directly or indirectly through six medium to low pressure regulator stations. In addition, continuing new business requests in the Port Chester area is expanding the load on the medium pressure system. The primary supply to this system is through a 12 inch main that runs from the City of Rye along Boston Post Rd north, along King St, through Port Chester. This main is fed from a main tie to the "Outer Loop" medium pressure system as well as from regulator station GR-457 in Rye. It is also fed from the west, in Purchase, by two regulator stations, GR-496 and GR-497, through a series of smaller diameter, leak prone steel mains running east towards Port Chester.

In the event of a disruption to the primary 12 inch diameter supply main, the ability to feed the load from Purchase-Rye area is restricted by the smaller diameter mains. At temperatures at or below freezing, there will be significant pressure drops across the system that will require operating GR-496 and GR-497 at maximum outlet pressure in order to maintain minimum pressures at the inlet to the regulator stations in Port Chester. There is corrosion repair history on the leak prone steel pipe, and a significant leak could limit our ability to feed the system during a supply contingency, putting the reliability of gas supply to thousands of customers at risk.

Starting in 2017, we will prioritize based on MRP scores and system leak history, the replacement of 1,000 feet of small diameter supply mains with 12 inch MPPE mains to improve supply reliability.

If the system capacity from the Purchase area is not upgraded, thousands of gas customers in the Port Chester area will continue to be at risk to lose service in the event of a major leak or damage to the current 12 inch supply main.

Supplemental Information:

- Alternatives: The MRP program identified segments for replacement that are 8" and smaller. Supply mains may be greater than 8" in diameter and are not considered for replacement under the MRP program. An alternative is to include these into the MRP ranking for consideration. The replacement of these supply main projects provides system improvement benefits beyond eliminating leak prone pipe. The primary purpose of the program is to improve the overall system pressures feeding existing Regulator Stations while eliminating leak prone pipe.

- Risk of No Action: By not replacing these identified sections of main, they will be susceptible to leaks and increase the risk of interruption. Interruption of this primary supply main during the heating season would result in significant customer outages in the areas.

- Non-financial Benefits: This program will support reducing the risk of a distribution event on the elevated pressure leak prone large diameter system. It will also support the continued reliability and availability of the gas system.

- Summary of Financial Benefits (if applicable) and Costs: This program is an O&M cost avoidance and does not yield direct financial benefits.

- Technical Evaluation/Analysis: The multi-year segments will be identified, evaluated, and prioritized for replacement based on risk factors such as repair history, outstanding leaks. Historically, the supply main projects were broken out to individual white papers and programs. The multiple line items were merged into one supply main program in order to enable prioritization of the similar work to address any emerging issues on the backbone of the supply system.

- Project Relationships (if applicable): None.

- Basis for Estimate: Historical Unit Cost.

Total Funding Level ($000):

Historical Spend

Actual 2010	**Actual 2011**	**Actual 2012**	**Historic Year** (O&M only)	**Actual 2013**	**Actual 2014**

Historical Elements of Expense

(Historical EOE breakout will only be completed for Steam projects/programs of $500 thousand or more and, for all other organizations, projects/programs of $1 million or more.)

EOE	Actual 2010	Actual 2011	Actual 2012	Historic Year (O&M only)	Actual 2013	Actual 2014
Labor						
M&S						
A/P						
Other						
Total						

Request ($000):

Request 2016	Request 2017	Request 2018	Request 2019	Request 2020	Request 2016-2020
	$5,557	$6,767	$6,813	$7,698	$26,835

Request by Elements of Expense

EOE	2016	2017	2018	2019	2020
Labor		220	261	264	298
M&S		596	710	358	404
A/P		2,987	3,556	3,998	4,555
Other		315	376	384	437
Overheads		1,439	1,864	1,809	2,004
Total		**$5,557**	**$6,767**	**$6,813**	**$7,698**

X	Capital
	O&M

2016 – Gas Operations

Project/Program Title	Emerging Supply Mains Reliability
Project Manager	John Ciallella
Hyperion Project Number	21260370
Organization's Project Number	N/A
Status of Project	Ongoing Engineering and Construction
Estimated Start Date	01/01/2016
Estimated Completion Date	Ongoing
Work Plan Category	Operational Risk

Work Description:

This project is part of an annual program to replace or rehabilitate supply mains on distribution pressures throughout the system. Since these mains act as a primary supply, replacement will improve system pressures and proactively replace leak prone pipe. The Units will be determined when this emerging work is identified and reviewed for replacement by field operations and engineering.

Justification Summary:

This is a multi-year project that provides a program for replacing large diameter supply mains. This program provides an opportunity to replace supply mains that are currently leaking and require a replacement job to mitigate immediate risk. Loss of service along supply mains due to a major leak could lead to customer outages and regulator impact during the winter heating season.

Supplemental Information:

- Alternatives: Continue to resolve leaks with main repairs instead of main replacement.
- Risk of No Action: If these mains are not replaced, they will continue to deteriorate and develop leaks that will need to be repaired as they arise. The risk of customer and regulator outages is increased should a serious leak develop during the heating season.
- Non-financial Benefits: Benefits include increased safety, reliability, efficiency and reducing the leak backlog.
- Summary of Financial Benefits (if applicable) and Costs: This program could reduce certain O&M costs.
- Technical Evaluation/Analysis: N/A
- Project Relationships (if applicable): N/A.
- Basis for Estimate: The estimate is based on historical unit cost

Total Funding Level ($000):

Historical Spend

Actual 2010	Actual 2011	Actual 2012	Historic Year (O&M only)	Actual 2013	Actual 2014

Historical Elements of Expense

EOE	Actual 2010	Actual 2011	Actual 2012	Historic Year (O&M only)	Actual 2013	Actual 2014
Labor						
M&S						
A/P						
Other						
Total						

Request ($000):

Budget 2015	Request 2016	Request 2017	Request 2018	Request 2019	Request 2020
	$6,999	$4,040	$4,128	$4,122	$4,133

Request by Elements of Expense

EOE	2015	2016	2017	2018	2019	2020
Labor		$280	160	160	160	160
M&S		$1,063	434	434	217	217
A/P		$3,548	2,172	2,170	2,418	2,446
Other		$402	228	228	232	235
Overheads		$1,706	1,046	1,136	1,095	1,075
Total		**$6,999**	**4,040**	**4,128**	**4,122**	**4,133**

X	Capital
	O&M

2017 – Gas Operations

Project/Program Title	Rehabilitate Large Diameter Gas Mains
Project Manager	John Ciallella
Hyperion Project Number	21680785
Organization's Project Number	N/A
Status of Project	Planning
Estimated Start Date	January 2017
Estimated Completion Date	On-going
Work Plan Category	Operational Risk

Work Description:

This is a multi-year project that provides a program for rehabilitating large diameter supply mains. Loss of service along supply mains due to a major leak could lead to customer outages and regulator impact during the winter heating season. There are three rehabilitation methods covered in this project:

1. CISBOT: Seal and reinforce 16" and larger diameter cast iron joints internally on highly congested and sensitive streets in lieu of keyhole repairs and/or main replacement.
   Units per Year: 320 joints

2. LINER: Utilize plastic liner on 16" and larger diameter mains to seal leaks and prevent future leaks in lieu of direct bury main replacement.
   Units per Year: 4,150 feet

3. KEYHOLE REPAIR: Externally seal 16" and larger diameter cast iron joints and unprotected steel couplings through use of keyhole (small footprint) excavation and installing encapsulation kits.
   Units per Year: 100 repairs

Justification Summary:

Through these three rehabilitation methods,

One rehabilitation method is the sealing of large diameter 16" and larger cast iron joints internally through CISBOT. CISBOT is a joint sealing robot manufactured by ULC that travels within the gas main to seal joints and prevent future leaks. This alternative minimizes the number of excavations to repair leaking joints on large diameter cast iron mains that are located on sensitive or congested streets. This process is designed to launch a tool head through a special fitting into a live cast iron gas main, which travels up to 500 feet inside the pipe then drills and injects anaerobic sealant into each joint it passes sealing any active leaks and preventing any future joint leaks while being pulled back to the launch site. The robot is then turned around to the other side of the launch fitting and the process is repeated in the second direction to complete up to 1,000 feet of main joint sealing from one insertion point with no release of gas to the environment and without disturbing service to our customers. The sealant used is an anaerobic sealant (cures in the absence of oxygen) made up primarily of acrylics that acts as a packing to stop gas from flowing between the dried-up jute fibers installed when the main was originally installed. This sealant has demonstrated through testing to be able to withstand the repeated ground movement from vehicular traffic, the seasonal pipe movement

from thermal expansion and contraction and would last at least 50 years. The wall thickness of the large diameter mains are generally in good condition. The leaks occur at the hubs, which are located approximately 12 feet apart. Therefore, the use of CISBOT to seal the cast iron joints internally will minimize the number of excavations required to eliminate the leaks and extend the useful life of the main.

Another rehabilitation method is pipe liner. The pipe liner is a seamless / joint-less circular woven fabric-hose made of polyester yarns and plastic coating which is bonded to the host pipe using a solvent free two component adhesive that is custom fit depending on the project. This method seals existing leaks and prevents future leaks. It minimizes lengthy excavation and re-construction. The pipeline has the ability to add 50 years of new life to the host pipe and can be utilized on both steel and cast iron.

An additional rehabilitation method is to externally seal a cast iron hub or other leak prone fitting. In cases where CISBOT or lining methods are not feasible, a small excavation can be performed over a leaking hub or fitting and an encapsulation kit can be installed. The encapsulation kit consists of a non-porous fabric boot that is strapped around the fitting in question, then filled with an epoxy and pressurized to ensure a proper seal. This method seals existing hubs and other fittings to prevent existing and future leaks.

This project addresses enterprise risks for Gas Distribution system events, Water Main Breaks, and Incurring Operating Penalties for Customer Outages.

Supplemental Information:

- Alternatives: Continue to resolve leaks with main repairs instead of main rehabilitation. Use current keyhole methods for sealing cast iron mains. This would require an excavation every 12 feet to seal leaking joints. Alternatively, replacement of the cast iron mains is not a good practice since the leak is at the joint and a repair to the joint can eliminate the leak and extend the useful life of the main without compromising the risk to public safety. In the case of leaking large diameter steel gas mains, keyhole methods cannot always be used to repair leaks. Replacement of large diameter steel gas mains involve costly, long lead time fittings and materials, and results in adverse customer impact due to large excavation footprint and lengthy installation time.

- Risk of No Action: If these mains are not rehabilitated, they will continue to deteriorate and develop leaks that will need to be repaired as they arise. The risk of customer and regulator outages is increased should a serious leak develop during the heating season. Repairing the leak is mandatory and is a rate case performance indicator. CISBOT and liners are methods to repair the leak while minimizing the disruption to the general public while also minimizing the cost of the repair.

- Non-financial Benefits: Benefits include increased safety, reliability, efficiency and reducing the leak backlog. This process extends the useful life of the gas main and reduces the effects of lost gas and water infiltration.

- Summary of Financial Benefits (if applicable) and Costs: This program is O&M cost avoidance and does not yield direct financial benefits. The use of CISBOT for reinforcing multiple joints on a segment of cast iron main will minimize numerous keyhole excavations and/or trenching if replacement was the method of repair. One excavation can be made to reinforce up to a 1,000 foot segment of pipe as opposed to making approximately 80 excavations for keyhole repairs to the same segment of pipes. The use of liners minimizes the amount of excavation and/or trenching if main replacement is required.

- Technical Evaluation/Analysis: This program has a direct impact on the reduction of the leak backlog. This program will help reduce the probability that a crack/break will cause an incident.

- Project Relationships (if applicable): N/A

- Basis for Estimate: Historical Unit Cost

Total Funding Level ($000):

Historical Spend

Actual 2011	Actual 2012	Actual 2013	Actual 2014	Historic Year (O&M only)	Forecast 2015

Historical Elements of Expense

(Historical EOE breakout will only be completed for Steam projects/programs of $500 thousand or more and, for all other organizations, projects/programs of $1million or more.)

EOE	Actual 2011	Actual 2012	Actual 2013	Actual 2014	Historic Year (O&M only)	Forecast 2015
Labor						
M&S						
A/P						
Other						
Total						

Request ($000):

Request 2016	Request 2017	Request 2018	Request 2019	Request 2020	Total Request
	$4,798	$4,902	$4,894	$4,908	$19,502

Request by Elements of Expense

EOE	2016	2017	2018	2019	2020
Labor		190	190	190	190
M&S		515	515	257	257
A/P		2,580	2,577	2,871	2,904
Other		271	271	277	279
Overheads		1,242	1,349	1,299	1,278
Total		**4,798**	**4,902**	**4,894**	**4,908**

[X] Capital

☐ O&M

2016 – Gas Operations

Project/Program Title	Replacement of Existing PE and Emergent Water Intrusion
Project Manager	Brian Yee-Chan
Hyperion Project Number	7GD9807, 7GD9810, 7GD9814, 7GD9840, 20953812
Organization's Project Number	N/A
Status of Project	Ongoing Program
Estimated Start Date	Ongoing Program
Estimated Completion Date	Ongoing Program
Work Plan Category	Operationally Required

Work Description:

This program covers emergency main replacement due to either of the following conditions:

1. Replacement of existing Polyethylene (PE) main.
2. Replacement of gas main due to water intrusion.

Units per Year: Approximately 1,500 feet of PE main or main of any material due to water intrusion will be replaced per year contingent upon determination that the main must be replaced in lieu of making an O&M repair.

Justification Summary:

Existing PE mains are replaced due to old plastic that is no longer used, such as aldyl-a, or if the PE main is under sized. Gas mains are susceptible to water intrusion due to water main breaks and storms such as Superstorm Sandy. Water poses a threat to the reliability of system because of the disruption it causes to gas flow. Both will be covered under this program.

Supplemental Information:

- Alternatives: There are no alternatives.
- Risk of No Action: If no action is taken, the reliability of the system can be compromised. Aldyl-a main, undersized PE main, and water intrusion will hinder the performance of the gas system.
- Non-financial Benefits: The replacement of specified main will improve the reliability of the gas system.
- Summary of Financial Benefits (if applicable) and Costs: By replacing the specified pipe, it will also result in future O&M leak cost avoidance for leak investigation and repairs.
- Technical Evaluation/Analysis: Computer model analysis software is utilized to determine if a PE main is undersized for existing and future load.
- Project Relationships (if applicable): N/A
- Basis for Estimate:

- Costs are estimated at $2K per foot for ~1,500 feet of replacement per year.

Total Funding Level ($000):

Historical Spend

Actual 2011	Actual 2012	Actual 2013	Actual 2014	Historic Year (O&M only)	Forecast 2015
$2,550	$2,560	$3,560	$2,000		

Historical Elements of Expense

(Historical EOE breakout will only be completed for Steam projects/programs of $500 thousand or more and, for all other organizations, projects/programs of $1million or more.)

EOE	Actual 2011	Actual 2012	Actual 2013	Actual 2014	Historic Year (O&M only)	Forecast 2015
Labor	$543	$245	$200	$28		
M&S	$41	$37	$26	$19		
A/P	$1,011	$369	$453	$172		
Other	$829	$567	$761	$325		
Total	$2,424	$1,218	$1,440	$544		

Request ($000):

Request 2016	Request 2017	Request 2018	Request 2019	Request 2020
$0	$3,029	$3,094	$3,088	$3,098

Request by Elements of Expense

EOE	2016	2017	2018	2019	2020
Labor		$340	$341	$335	$335
M&S		$242	$242	$242	$243
A/P		$1,412	$1,415	$1,454	$1,477
Other		$147	$148	$157	$164
Overheads		$888	$948	$900	$879
Total		**$3,029**	**$3,094**	**$3,088**	**$3,098**

X	Capital
	O&M

2017 – Gas Operations

Project/Program Title	SM – Yorktown Upgrade
Project Manager	John Ciallella
Hyperion Project Number	PR.LGD0010
Organization's Project Number	N/A
Status of Project	Planning
Estimated Start Date	01/01/2017
Estimated Completion Date	12/31/2020
Work Plan Category	Strategic

Work Description:
This work will be completed in phases as follows: In 2017, replace 1,300 feet of 8" steel pipe that was installed in 1956 with 12" High Pressure Polyethylene Pipe HPPE from the Algonquin Gas Pipeline gate station along Fairview Ave towards Gomer Street. In 2018, replace 1,300 feet of 8" steel installed in 1956 with 12" HPPE from Fairview Ave and Gomer Street to # 3384 Gomer Street. In 2019, replace 1,300 feet of 8" steel installed in 1956 with 12" HPPE from # 3384 Gomer Street to Gomer Street and Smith Road.

In future years, 12,800 feet of new 12" HPPE main will be installed along Gomer Street to Granite Springs Road to valve 36606 to connect to the existing 12" HPPE main extension from the Hawthorne-Katonah system. In addition, a replacement or alternate regulator station at the Algonquin Gate station will need to be installed to provide for the upgrade of the Yorktown high pressure system from a Maximum Allowable Operating Pressure MAOP of 60 psig to 91 psig.

Justification Summary:

The Yorktown high pressure (60 psig) system is 11.3 miles of main – the vast majority of which is 8 inch steel installed in the 1950s and 1960s. It supplies 3,000 high pressure customers in the Yorktown area. It is supplied by the Algonquin Yorktown gate station and the Yorktown-Katonah system.

The gas network analysis model has identified the need to increase system capacity to adequately supply the Hawthorne-Katonah system and avoid thousands of customer outages in the event of a cold weather supply curtailment from Tennessee Pipeline at GR-484 in Hawthorne. This would require the replacement of 3 miles of 8 inch steel with 12 inch pipe from the Algonquin Yorktown gate station to the Yorktown-Katonah system.

Supplemental Information:

- Alternatives: There are no alternatives.

- Risk of No Action: If no action is taken, there will be a risk to provide adequate capacity for the Hawthorne – Katonah Supply System. .

- Non-financial Benefits: Replacement of this 60 psig supply main will eventually result in improved system capacity that will result in the fuller utilization of the Yorktown and Hawthorne Stations to back up the other in the event of a major leak, damage or supply curtailment affecting the system.

- Summary of Financial Benefits (if applicable) and Costs: This program will support reducing the risk of a distribution event on the high pressure leak prone system. It will also support the continued reliability and availability of the gas system.

- Technical Evaluation/Analysis: Locations are identified where the gas network analysis model predicts conditions of lower than required system performance, along with the predicted benefit after the recommended reinforcement is completed.

- Project Relationships (if applicable):

- Basis for Estimate: Historical Unit Cost.

Total Funding Level ($000):

Historical Spend

Actual 2009	Actual 2010	Actual 2011	Actual 2012	Historic Year (O&M only)	Actual 2013

Historical Elements of Expense
(Historical EOE breakout will only be completed for Steam projects/programs of $500 thousand or more and, for all other organizations, projects/programs of $1 million or more.)

EOE	Actual 2009	Actual 2010	Actual 2011	Actual 2012	Historic Year (O&M only)	Actual 2013
Labor						
M&S						
A/P						
Other						
Total						

Request ($000):

Request 2017	Request 2018	Request 2019	Request 2020	Total
$1,010	$1,031	$1,030	$516	$3,587

Request by Elements of Expense

EOE	2016	2017	2018	2019	2020
Labor		$80	$40	$40	$20
M&S		$152	$152	$152	$76
A/P		$445	$500	$507	$257
Other		$52	$57	$57	$29
Overheads		$281	$282	$274	$134
Total		**$1,010**	**$1,031**	**$1,030**	**$516**

X	Capital
	O&M

2019 – Gas Operations

Project/Program Title	Rehabilitation of the Gas Supply Main to City Island
Project Manager	Tomas Hernandez
Project Number	9GD9803
Organization's Project Number	N/A
Status of Project	Not Started
Estimated Start Date	Ongoing Program
Estimated Completion Date	Ongoing Program
Work Plan Category	Strategic- System and Component Upgrades

Work Description:

City Island is currently supplied by a radial main that runs through Pelham Bay Park. This existing main is the single feed to the Island. The single feed was installed in 1950 at the bottom of the Eastchester Bay from the Bronx Pelham Bay Park area to City Island.

This project is to rehabilitate the existing 1950's vintage bare steel 6" gas main supplying high pressure gas supply to City Island.

Justification Summary:

The plan is to establish a temporary gas main on the new City Island Bridge. This gas main is to be energized in the event of an emergency and when we rehabilitate the existing gas supply. Therefore, in 2019, we plan to utilize the gas main on the bridge and isolate the existing 1950 steel gas main. Then, insert the existing steel gas main with plastic gas main. The newly inserted gas main will be reenergized and the temporary supply on the bridge will be isolated and left in a closed position.

If the existing gas main cannot be inserted due to obstructions, then the new gas supply will be planned through horizontal directional drilling. This funding supports the installation of a new gas main through insertion utilizing the existing 6" steel as a sleeve.

Supplemental Information:

- Alternatives: Retain the 1950 HP unprotected steel main that feeds City Island. This approach will result in an emergency replacement project and would extend the time in which we would need to have the temporary gas main on the bridge energized.

- Risk of No Action: If the 6" bare steel main is not replaced, the approximately 1675 gas customers in City Island will continue to be at risk of losing service in the event of a major leak or damage to the current supply main.

- Non-financial Benefits: : Provide a reliable feed to city island in lieu of using the contingent feed on the bridge for extended periods of time if an emergency replacement is needed.

- Summary of Financial Benefits (if applicable) and Costs N/A
- Technical Evaluation/Analysis: N/A
- Project Relationships (if applicable): None
- Basis for Estimate: Engineering Derived Estimate

Total Funding Level ($000):

Historical Spend

Actual 2011	Actual 2012	Actual 2013	Actual 2014	Historic Year (O&M only)	Forecast 2015

Historical Elements of Expense
(Historical EOE breakout will only be completed for Steam projects/programs of $500 thousand or more and, for all other organizations, projects/programs of $1 million or more.)

EOE	Actual 2011	Actual 2012	Actual 2013	Actual 2014	Historic Year (O&M only)	Forecast 2015
Labor						
M&S						
A/P						
Other						
Total						

Request ($000):

Request 2016	Request 2017	Request 2018	Request 2019	Request 2020
			$721	$5,167

Request by Elements of Expense

EOE	2016	2017	2018	2019	2020
Labor				$28	$200
M&S				$38	$271
A/P				$423	$3,058
Other				$41	$294
Overheads				$191	$1,344
Total				**$721**	**$5,167**

X	Capital
	O&M

2017 – Gas Operations

Project/Program Title	Second Supply to Roosevelt Island
Project Manager	Russ Grogan
Project Number	TGD9816
Organization's Project Number	
Status of Project	Design
Estimated Start Date	1/1/2017
Estimated Completion Date	12/31/2017
Work Plan Category	Strategic

Work Description:

The New York City Economic Development Corporation plans to develop a New Applied Science Center on Roosevelt Island. With a five-phase build-out that includes new educational facilities, residential towers, emergency generation and oil to gas conversions of Coler Hospital the additional connected gas load exceed 900 mcfh. With an anticipated coincident load of 549 mcfh, the existing medium pressure system supplied from Queens is not adequate to meet the existing and new demand.

To support the Applied Science Center, a new high pressure gas main was extended from Manhattan to Roosevelt Island and the replacement of the existing 1905 and 1940 steel risers is planned for replacement in 2015. Further, the replacement of over 3,000 feet of steel gas main on the Island and an upgrade of existing services from medium pressure to high pressure is planned for 2015. After the completion of this work, the new Applied Science will be connected to a new high pressure gas main on Roosevelt Island and the Island will be upgraded to high pressure.

This work is to replace the existing medium pressure supply main from Queens to Roosevelt Island to provide a second feed of high pressure to the Island. The work includes removal of the existing coupled steel main in the tunnel and installation of new steel coated pipe in the tunnel from Queens to Roosevelt Island risers. In addition, the revamp of the existing medium pressure regulator station at Ravenswood will be completed.

Justification Summary:

The replacement of the existing medium pressure feed will enable a two way feed to the Island and provide increased reliability. It will also support existing and current gas demand, while enabling contingency for all customers on Roosevelt Island.

Supplemental Information:

- Alternatives: Maintain Roosevelt Island on a one way high pressure feed.

- Risk of No Action: The risk of no action would result in an increased risk of an outage and loss of feed to the island in the event of an emergency shut-down. This would result in lost revenue, broken commitments to customers and NYC, compromising the build-out of the campus facility. Failure to pursue the two way feed would also contradict numerous designs and benefits that have been conveyed to the community and the operating corporation for the Island.

- Non-financial Benefits: This phase is to ensure contingency and avoid risk of future outages to the Island. As of 2015, the existing Island is supported by one medium pressure gas main from Queens through the Ravenwood Tunnel supplying gas to two 6" gas risers. The initial phase started late 2015 and expected to be completed before the summer of 2016 is to replace the existing risers and provide a new high pressure gas feed from Manhattan to Roosevelt Island. This project will replace the existing coupled pipe in the Ravensood Tunnel from Queens to the risers feeding Roosevelt Island. Then, modify the existing Regulator Station in Queens to accommodate a second high pressure feed. The end state will provide two high pressure feeds to Roosevelt Island, one from Manhattan(installed in 2016) and the second feed from Queens (energized in 2017). This design will provide a two way feed to the Island which increases the availability and reliability to gas for existing customers while supporting any future gas demands on the Island.

- Summary of Financial Benefits (if applicable) and Costs: None

- Technical Evaluation/Analysis: None

- Project Relationships (if applicable): None

- Basis for Estimate: Conceptual design/estimate completed for the entire project.

Total Funding Level ($000):

Historical Spend

Actual 2011	Actual 2012	Actual 2013	Actual 2014	Historic Year (O&M only)	Forecast 2015

Historical Elements of Expense
(Historical EOE breakout will only be completed for Steam projects/programs of $500 thousand or more and, for all other organizations, projects/programs of $1 million or more.)

EOE	Actual 2010	Actual 2011	Actual 2012	Historic Year (O&M only)	Actual 2013	Actual 2014
Labor						
M&S						
A/P						
Other						
Total						

Request ($000):

Request 2015	Request 2016	Request 2017	Request 2018	Request 2019	Request 2020
		$12,122			

Request by Elements of Expense

EOE	2015	2016	2017	2018	2019	2020
Labor			$481			
M&S			$1,828			
A/P			$6,020			
Other			$655			
Overheads			$3,138			
Total			**$12,122**			

ISOLATION VALVE INSTALLATION PROGRAM:

X	Capital
	O&M

2017 – Gas Operations

Project/Program Title	Isolation Valves
Project Manager	John Ciallella
Hyperion Project Number	21680784
Organization's Project Number	N/A
Status of Project	Planning
Estimated Start Date	01/01/2017
Estimated Completion Date	12/31/2021
Work Plan Category	Operational Risk

Work Description:

This is a five-year project that provides a program for installing isolation main valves based on Company's current Emergency Management Critical and Sensitive Customer list. This list includes but is not limited to customers such as hospitals, nursing homes, daycare centers, and customers utilizing life sustaining equipment. A total of 521 customers have been identified, requiring approximately 1,195 valves for area isolation. The installation of these valves is estimated to cost $25 million.

This work is not mandatory but has been recommended by the NTSB following the East Harlem Gas Incident.

Justification Summary:

During the 2014 East Harlem gas event, Con Edison was unable to stop the flow of gas in the leaking pipeline until 1:44 pm, more than 4 hours after the incident occurred. This is due largely to the fact that crews need to excavate and manually stop the flow of gas by installing fittings and stoppers. Had Con Edison been able to locate isolation valves on the distribution main, the leaking gas main could have been isolated sooner after the explosion. This project will allow for faster isolation during a potential gas event and mitigate the possible impacts to critical customers. Con Edison will review and update the Emergency Management Critical and Sensitive Customer list on an annual basis continue to propose any new locations where additional isolation valves can be installed.

Supplemental Information:

- Alternatives: Continue to install valves through ongoing main replacement without a program to target critical customers.

- Risk of No Action: Without proactively installing isolation valves, Con Edison prolongs the time taken to isolate customers affected by an emergency situation.

- Non-financial Benefits: The installation of isolation valves allows for affected areas to be isolated in a timely manner, minimizing the danger to first responders and the public, and reducing the delay in recovery operations.

- Summary of Financial Benefits (if applicable) and Costs: This program is an O&M cost avoidance and does not yield direct financial benefits.

- Technical Evaluation/Analysis:

- Project Relationships (if applicable): N/A

- Basis for Estimate: On average, it costs Con Edison $20,850 to install a new valve. Estimating that 1,195 valves will need to be installed to adequately isolate all 521 critical customers, the total cost for this project is $25 million.

Total Funding Level ($000):

Historical Spend

Actual 2011	Actual 2012	Actual 2013	Actual 2014	Historic Year (O&M only)	Forecast 2015

Historical Elements of Expense

(Historical EOE breakout will only be completed for Steam projects/programs of $500 thousand or more and, for all other organizations, projects/programs of $1million or more.)

EOE	Actual 2011	Actual 2012	Actual 2013	Actual 2014	Historic Year (O&M only)	Forecast 2015
Labor						
M&S						
A/P						
Other						
Total						

Request ($000):

Request 2016	Request 2017	Request 2018	Request 2019	Request 2020
	$5,051	$5,160	$5,152	$5,166

Request by Elements of Expense

EOE	2016	2017	2018	2019	2020
Labor		$200	$200	$200	$200
M&S		$542	$542	$271	$271
A/P		$2,715	$2,713	$3,023	$3,057
Other		$285	$285	$290	$293
Overheads		$1,309	$1,420	$1,368	$1,345
Total		**$5,051**	**$5,160**	**$5,152**	**$5,166**

SERVICE REPLACEMENT:

X	Capital
	O&M

2016 – Gas Capital

Project/Program Title	Services Associated With Main Work
Project Manager	Various
Hyperion Project Number	7GD9805, 7GD9808, 7GD9811, 7GD9815, 20953826
Organization's Project Number	N/A
Status of Project	Construction
Estimated Start Date	Ongoing
Estimated Completion Date	Ongoing
Work Plan Category	Regulatory Mandated

Work Description:

The work covered in this program includes the replacement of non-leaking services associated with Main Replacement Programs (MRP).

- Units per Year: Approximately 1 service replacement every 150 feet of main replacement
- Mandatory: The replacement of non-leaking steel services when completing the replacement of the main is in compliance with Gas Specification G-8100 and G-8005.

Justification Summary:

We plan on replacing approximately 2,500 services in conjunction with the Main Replacement Program (MRP). The MRP program eliminates the existing unprotected steel and/or cast iron gas main with new protected steel or plastic. This program funding is associated with the replacement of the existing unprotected pre-1972 steel services that exist on the planned MRP gas main segments. The MRP program is an accelerated replacement program which supports the elimination of unprotected steel and cast iron gas main to reduce risk and improve system reliability. In addition, this replacement program is a rate case required program and supports our long range plan to eliminate our leak prone gas main with plastic and/or steel protected gas main. As part of the accelerated replacement program, the unprotected steel services would not be connected to a new gas main. Instead, the leak prone steel service would be replaced in conjunction with our accelerated efforts.

Supplemental Information:

- Alternatives: Transferring the existing unprotected steel service to a new plastic main is not a viable option and not a good business practice. Retaining the existing small diameter unprotected steel gas service would result in an increased risk of future leaks on the service line. Since this service line is generally an average of 40-50' from gas main to property line, a leak on the service line may result in a hazardous leak and would require emergency response and increase our risk of a distribution event.

- Risk of No Action: Since these services are installed prior to 1972 and are not cathodically protected, it is a not a good business practice to leave the old steel service, which is at risk for corrosion. Future leaks on the service may result in a hazardous leak which negatively impacts the

overall safety and reliability of the gas system. In addition, the replacement of the service at the time of the leak would require excavation to make the necessary repairs. This work will help avoid future re-excavations to eliminate leaks and will contribute to improved customer satisfaction.

- Non-financial Benefits: The replacement of the service is in conjunction with the replacement of 65 miles of leak prone pipe, which is a PSC mandated program and one of our KPI's. In addition to replacing leak prone gas main, the replacement of these services will result in avoided future leaks.

- Summary of Financial Benefits (if applicable) and Costs: Replacement of non-leaking services while performing capital main improvements will reduce future O&M costs related to investigation of leaks on the bare steel service and resulting excavation to repair/replace the steel service.

- Technical Evaluation/Analysis: Replacement of non-leaking services has an indirect impact on the KPI for workable leak backlogs. Customer satisfaction is a KPI that will be impacted if services are not replaced and service leaks develop and excavation is required to repair/replace the service. In addition, the elimination of leak prone pipe has a direct impact on our Sustainability Strategy and the reduction of methane emissions from the gas distribution system.

- Project Relationships (if applicable): This program is directly related to the MRP programs. There are currently ~70K unprotected steel gas services in the Con Edison system. As we replace our gas mains, we plan to replace any unprotected steel gas service as part of this effort. We estimate ~2,500 services replaced under this program annually. In addition, a leak is discovered on a steel gas service, we would replace such service on the GD-3 Leaking Service Program. We estimate to replace ~2,500 services per year in the next 5 years under this program. As we continue our accelerated efforts and address emergent service replacements, the existing inventory will be reduced accordingly by over 5000 unprotected services per year which will reduce the existing inventory of ~70K services. These programs will improve the safety and reliability of gas to our customers. This program is also related to Service No Curb Valves and share the same budget line item in Hyperion.

- Basis for Estimate: For every 150 feet of main replaced, it is estimated that we will replace 1 pre-1972 steel gas service under the main replacement program. Since the pit over the gas main is charged to the gas main work, the overall service unit cost are lower than other service replacement programs. The estimated cost per service is $14K per service

Total Funding Level ($000):
Historical Spend

Actual 2011	Actual 2012	Actual 2013	Actual 2014	Historic Year (O&M only)	Forecast 2015
$22,356	$20,108	$18,328	$23,325		$30,610

Historical Elements of Expense

EOE	Actual 2011	Actual 2012	Actual 2013	Actual 2014	Historic Year (O&M only)	Forecast 2015
Labor	$4,785	$3,274	$3,043	$4,220	N/A	$4,369
M&S	$765	$584	$591	$1,465	N/A	$1,763
A/P	$6,630	$4,685	$8,722	$10,158	N/A	$12,758
Other	$1,736	$3,501	($842)	($71)	N/A	$1,282
Indirect	$8,440	$8,064	$6,814	$7,553	N/A	$10,438
Total	**$22,356**	**$20,108**	**$18,328**	**$23,325**	**N/A**	**$30,610**

Request ($000):

Request 2016	Request 2017	Request 2018	Request 2019	Request 2020
$30,767	$45,391	$49,254	$52,074	$52,222

Request by Elements of Expense

EOE	2016	2017	2018	2019	2020
Labor	$2,569	$3.871	$4,123	$4,372	$4,176
M&S	$1,472	$2,072	$2,216	$2,361	$2,361
A/P	$16.787	$24,332	$25,846	$27,547	$28,239
Other	$1,720	$2,369	$2,550	$3,089	$3,121
Overheads	$8,219	$12,747	$14,520	$14,705	$14,325
Total	**$30,767**	**$45,391**	**$49,255**	**$52,074**	**$52,222**

X	Capital
	O&M

2016 – Gas Capital

Project/Program Title	Services Without Curb Valves
Project Manager	Various
Hyperion Project Number	7GD9813
Organization's Project Number	N/A
Status of Project	Construction
Estimated Start Date	Ongoing
Estimated Completion Date	2020
Work Plan Category	Regulatory Mandated

Work Description:

Replacement of services without curb valves. Curb valves isolate the flow of gas in the event of an emergency and are installed between the main and building on a service line. These steel services were previously installed without a curb valve at the time of installation.

A minimum of 95 units will be completed per year to achieve program completion by 2020.

Justification Summary:

The New York City Fuel Gas Code requires outdoor shutoff valves on all gas services by January 1, 2020. The New York City Fire Department (FDNY) is monitoring this requirement and requires an annual status report. In 1998, Con Edison conducted a field survey of existing gas services in NYC and found 5,526 services without outside shutoff valves. A program was initiated to replace all services without curb valves by 2020. As of January 2016, there was no backlog of commercial services that need to be replaced and approximately 426 that need to be replaced by 2020. We anticipate some of these will be replaced during routine work. We plan to replace 108 services in 2016.

Supplemental Information:

- Alternatives: None

- Risk of No Action: We would be in violation of the mandate by the New York City Fuel Gas Code which requires shutoff valves on all gas services. A curb valve establishes the necessary isolation of the gas flow to the customer which enhances safety and reliability of gas service in the case of fire or emergency leak to shut off a gas service.

- Non-financial Benefits: The ability to shut the service off from outside the house helps ensure the safety of the public, employees and FDNY in the case of a building or house fire. This enables the timely and safe shut down of gas without having to enter the premises.

- Technical Evaluation/Analysis: On an annual basis Con Edison files the on-going status of this program to New York City Department of Buildings and FDNY.

- Project Relationships (if applicable): In some cases, we are able to replace services without valves as part of gas main replacement projects and/or if /when the steel gas service experiences a leak and is replaced under the leaking service replacement program. This program is also related to Services Associated with Main Work and share the same budget line item in Hyperion.

- Basis for Estimate: This program is only in Queens and the Bronx and replaced a minimum of 95 services per year at an estimated cost of $11,500 per service. This unit cost is in line with the costs for new business service work.

Total Funding Level ($000):

Historical Spend

Actual 2010	Actual 2011	Actual 2012	Actual 2013	Historic Year (O&M only)	Actual 2014
1,912	**1,469**	**.341**	**-513**		**291**

Historical Elements of Expense
(Historical EOE breakout will only be completed for Steam projects/programs of $500 thousand or more and, for all other organizations, projects/programs of $1 million or more.)

EOE	Actual 2010	Actual 2011	Actual 2012	Actual 2013	Historic Year (O&M only)	Actual 2014
Labor	478	203	14	52		170
M&S	77	76	55	12		22
A/P	627	629	152	165		90
Other	730	561	120	-742		9
Total	**1,912**	**1,469**	**341**	**-513**		**291**

Request ($000):

Request 2016	Request 2017	Request 2018	Request 2019	Request 2020
$1,101	$1,110	$1,134	$1,132	$1,136

Request by Elements of Expense

EOE	2016	2017	2018	2019	2020
Labor	194.80	175.00	154.80	160.00	160.00
M&S	58.80	58.80	59.10	59.06	59.00
A/P	452.30	478.20	509.00	518.00	530.00
Other	45.27	47.69	50.45	51.24	52.30
Overheads	349.43	350.52	360.32	343.37	334.72
Total	**1,100.60**	**1,110.20**	**1,133.67**	**1,131.67**	**1,136.02**

EMERGENCY REPLACEMENT OF SERVICES:

X	Capital
	O&M

2016 – Gas Operations

Project/Program Title	Leaking Services
Project Manager	Various
Project Number	2GD2153, 2GD3153, 2GD5153, 3GD4153, 21533578
Organization's Project Number	GD-3
Status of Project	Ongoing Program
Estimated Start Date	Ongoing
Estimated Completion Date	Annual program
Work Plan Category	Regulatory Mandated

Work Description:
This program addresses incoming gas leaks that are pinpointed and identified to be on an existing pre-1972 steel gas service. For pre-1972 steel gas services, replacement is the most prudent means to clear a gas leak and make the condition safe. Approximately 25 percent of the gross incoming outside gas leaks received result in the leak being pinpointed on a pre-1972 steel gas service, which required replacement under this program to clear the leak.

Units per Year:
We project the replacement of approximately 2,600 services annually.

Justification Summary:

Leaking pre-1972 gas services can be repaired in lieu of replacement if the repair can be made without causing an interruption to the gas service supplying the customer. All services that were installed after 1972 that are temporarily disconnected to repair a leak on the service must pass a pressure test. Only those failing the pressure test will result in the replacement of the service. However, once an unprotected service leaks, it is likely to leak again in a short time. To ensure safety and reliability, these services must be replaced.

Supplemental Information:

- Alternatives: There are no alternatives, an unprotected pre-1972 steel service must be replaced given the service cannot be reenergized after losing integrity.

- Risk of No Action: Any gas readings which are within 5 feet of the building wall are considered a type 1 leak, (i.e., potentially hazardous to life or property). Many of our leaking steel gas services have passed their useful life. Repairing a leak on a steel service without replacing it, may result in a future type 1 leak which would create an additional potentially hazardous condition to the life and property. The replacement of the leaking gas service is both a risk avoidance measure and a cost avoidance measure, which minimizes future cost for excavating and repairing future leaks that may occur.

- Non-financial Benefits: This project will ensure that we continue providing safe and reliable natural gas to our customers. The replacement of leaking unprotected steel services with new plastic gas services will minimize the risk of future leaks.

- Summary of Financial Benefits (if applicable) and Costs: No financial benefit outside of cost avoidance. Replacing leaking gas services is part of our program to control the year-end backlog. Exceeding the PSC leak backlog indicators could cost the company in assessed penalties.

- Technical Evaluation/Analysis: Generally, leaking gas services are considered critical in attaining the year end leak backlog goal. Therefore, the elimination of the leaks through the replacement of the vintage service reduced the workable leak backlog and minimizes the risk for future workable leaks on that service line.

- Project Relationships (if applicable): This program is directly related and proportional to the incoming leak trends. Therefore, as incoming leaks trend downward, so too will the units replaced, and conversely if incoming leaks trend upwards, so too will the service replacements under this program

- Basis for Estimate: Units are projecting a continuation of the 2014 to 2015 YTD increase. In 2014 and 2015 we replaced +/- 2,400 services each year. Based on the continued increasing leak trend, we project a slight increase in the units to be completed under this program for the next several years.

	Total Dollars (000s)	Units	Total Dollars (000s)	Units	Total Dollars (000s)	Units	Total Dollars (000s)	Units	Total Dollars (000s)	Units
	FY16	FY16	FY17	FY17	FY18	FY18	FY19	FY19	FY20	FY20
Manhattan	$ 5,057	160	$ 5,109	160	$ 5,213	160	$ 5,212	160	$ 5,229	160
Bronx	$ 7,105	500	$ 7,170	500	$ 7,297	499	$ 6,581	450	$ 6,604	450
Lower 5 Muni's Westchester	$ 8,051	350	$ 8,131	350	$ 8,300	350	$ 8,291	350	$ 8,316	350
Queens	$ 8,294	475	$ 8,541	475	$ 8,892	475	$ 9,061	475	$ 9,270	475
Upper Westchester	$ 17,732	1150	$ 17,903	1150	$ 18,288	1150	$ 18,263	1150	$ 18,313	1150
		2635		2635		2634		2585		2585

Total Funding Level ($000):

Historical Spend

Actual 2011	Actual 2012	Actual 2013	Actual 2014	Historic Year (O&M only)	Forecast 2015
$34,678	$36,435	$31,590	$44,266		

Historical Elements of Expense

EOE	Actual 2011	Actual 2012	Actual 2013	Actual 2014	Historic Year (O&M only)	Forecast 2015
Labor						
M&S						
A/P						
Other						
Total						

Request ($000):

Budget 2015	Request 2016	Request 2017	Request 2018	Request 2019	Request 2020
$41,166	$46,238	$46,853	$47,990	$47,408	47,731

Request by Elements of Expense

EOE	2015	2016	2017	2018	2019	2020
Labor	$9,047	$10,007	$10,390	$10,050	$10,102	$10,505
M&S	$952	$2,548	$2,438	$2,222	$5,214	$5,245
A/P	$7,375	$13,171	$13,070	$14,307	$11,911	$12,024
Other	$7,647	$1,707	$1,666	$1,729	$1,744	$1,760
Overheads	$16,145	$18,805	$19,289	$19,682	$18,437	$18,197
Total	**$41,166**	**$46,238**	**$46,853**	**$47,990**	**$47,408**	**$47,731**

2. TRANSMISSION PROGRAMS AND PROJECTS

TRANSMISSION RISK REDUCTION AND RELIABILITY PROJECTS:

X	Capital
	O&M

2017 – Gas Operations

Project/Program Title	TG - Remotely Operated Valves (ROVs)
Project Manager	TBD
Hyperion Project Number	7GD9823
Organization's Project Number	N/A
Status of Project	Ongoing Program
Estimated Start Date	Ongoing Program
Estimated Completion Date	Ongoing Program
Work Plan Category	Strategic- System and Component Upgrades

Work Description:

The Remotely Operated Valve (ROV) program consists of converting existing transmission valves or installing new ROVs, to meet the future ROV design criteria as specified in G-8051. Once the program is complete, the closure of any two consecutive ROVs will not negatively impact supply mains or the distribution system on an average winter day (20°F).

High Level Schedule: install one new ROV or retrofit one valve into a ROV per year. There are eighteen (18) locations that have been identified for this program; therefore, this work would be conducted over an eighteen-year period. The prioritization of the ROVs was based on the total number of customers that are negatively impacted within the existing ROV cases. The first five ROV locations that have been identified are:

1. Valve 2288 - Manhattan
2. Valve 6406 – Bronx
3. Valve 3059 – Manhattan
4. Valve 7638 – Bronx
5. Valve 35278 – Westchester

Justification Summary:

Remote Operated Valves (ROVs) are installed in order to:

- Rapidly isolate a compromised section of the transmission system to minimize affected areas
- Rapidly isolate the transmission system at river and tunnel crossings and at the outlet of gate stations
- Rapidly separate intersecting transmission or supply mains at tee or branch locations thereby minimizing affected areas

In addition, the future Gas System Design Criteria requires that ROVs be installed for the following reasons:

- To limit the loss of regulator stations to no more than one high pressure and one low pressure regulator station
- Closure of any two (2) ROVs will not negatively impact supply mains or the distribution system on an average winter day (20°F).

Supplemental Information:

- Alternatives: An alternative to remotely operated valves is to utilize the existing values and close those valves manually. This alternative would prevent the rapid isolation of affected sections of the gas transmission system and would increase the risk of a wide spread customer outage due to a catastrophic event.

- Risk of No Action: If this project is not completed, the ability to respond to adverse conditions on the gas transmission system is greatly reduced. The time required to isolate the transmission system would still be based on a manual effort. Multiple personnel would need to be dispatched to the appropriate valves, travel to the location, gain access and operate the valve. This program greatly increases contingency mitigation.

- Non-financial Benefits: Enhanced employee and public safety and reliability.

- Summary of Financial Benefits (if applicable) and Costs: The total capital cost of this project is approximately $27 million. This estimate is based upon eighteen (18) ROVs being installed at an average cost of $1.5 million each.

- Technical Evaluation/Analysis: An evaluation of this project was conducted using Stoner Network Analysis, both steady state and unsteady state analysis was performed. The studies clearly indicate that isolating the affected section of the gas transmission system would significantly reduce the possibility of a wide spread customer outage and would minimize collateral damage associated with a catastrophic event.
    - Major assumptions relating to this program are:
        - ☐ Contractor price for the installation of a new valve, ROV components and associated piping or the price associated with retrofitting existing valves.
        - ☐ Various locations have been clearly identified as not being able to be modified due to subsurface interference preventing the installation of a vault, communication and telemetric equipment. These cases would require a new valve installation and offsetting transmission main.

- Project Relationships (if applicable): N/A

- Basis for Estimate: Historical. This is an ongoing project with one ROV being completed per year for the next 18 years.

Total Funding Level ($000):

Historical Spend

Actual 2011	Actual 2012	Actual 2013	Actual 2014	Historical Year (O& M only)	Forecast 2015
$800	$800	$1,000	$1,500		

Historical Elements of Expense

EOE	Actual 2011	Actual 2012	Actual 2013	Actual 2014	Historic Year (O&M only)	Forecast 2015
Labor						
M&S						
A/P						
Other						
Total						

Request ($000):

Request 2016	Request 2017	Request 2018	Request 2019	Request 2020
$0	$1,478	$1,977	$3,607	$3,616

Request by Elements of Expense

EOE	2016	2017	2018	2019	2020
Labor	0	$59	$76	$140	$140
M&S	0	$223	$290	$532	$532
A/P	0	$731	$956	$1,777	$1,800
Other	0	$83	$111	$201	$203
Overheads	0	$382	$544	$957	$941
Total	**0**	**$1,478**	**$1,977**	**$3,607**	**$3,616**

X	Capital
	O&M

2016 – Gas Operations

Project/Program Title	TG - Transmission Pipeline Integrity Main Replacement Program
Project Manager	Anthony Leto
Hyperion Project Number	7GD9819
Organization's Project Number	N/A
Status of Project	Project Not Started
Estimated Start Date	On going
Estimated Completion Date	On going
Work Plan Category	Strategic- System and Component Upgrades

Work Description:

This is a multi-year project to replace sections of defective transmission main that are identified through pipeline integrity assessments administered by the Integrity Management Plan, which guides our inspection of the transmission system for existing external and internal corrosion or damage in compliance with federal and state regulatory requirements. Through this program, we will have conducted the internal corrosion direct assessment along with an extensive external survey of all 88 miles of transmission pipeline.

- Units per Year: This main replacement program provides for 200 linear feet of new pipe per year.
- Mandatory: The scope of work for the main replacement program is driven by the direct assessment results of our Pipeline Integrity program. The timely replacement or repair of any identified pipe damage that affects pipeline integrity is mandatory.
- High-Level Schedule: The replacement schedule is driven by the results of our transmission main inspection program. Damaged pipe will be replaced either at the time of discovery or as soon as feasible.

Justification Summary:

Following recent repairs made to our transmission system, a multi-year pipeline replacement program is prudent. For example, during the Direct Examination phase of our Pipeline Integrity program corrosion was found at reinforcing ears near a compression coupling located at California Road and Mill Road in Eastchester. This corrosion was repaired in 2006 by replacing a small section of main. Another corroded coupling was later discovered as the source of a leak at California Road and Allair St. in Eastchester. Additional corrosion pits were discovered from direct assessment of the pipe adjacent to this coupling. These historical examples reveal the need to set aside funds for replacing pipe as anomalies are discovered.

Supplemental Information:

- Alternatives: There are acceptable alternatives to pipe replacement such as split repair sleeves, grinding, high hats, leak clamps, hot tapping, and welded patch plates. However, each repair method is acceptable for only certain types of damage, in accordance with Con Edison maintenance procedures. Aside from these specific instances, pipe replacement is the only acceptable method.

- Risk of No Action: Risk of fire or explosion arises from workers (Company, contractor or other) who excavate and accidentally make contact with Con Edison's gas transmission main. Other

potential causes of this type of incident might be gas transmission main damage that has gone undetected resulting in localized corrosion, or leaking adjacent water lines that erode the gas pipe. These scenarios could create a leak that might lead to an explosion or fire.

Public safety and service reliability could be imperiled by an incident of this nature. The cost of restoring damaged customer property, Company property and systems (gas, electric, or steam structures), and non-Company utilities could also be significant. In addition, the Company might have to engage in an extensive effort to restore gas service to customers. This type of event could lead to increased oversight and/or penalties from regulatory agencies, which could mandate relocation of Company facilities or impose restrictions on gas pressures, both of which could adversely impact our operations.

The aforementioned risk of taking no action is tempered by existing pipeline monitoring programs. Gas Control continually monitors system pressures and flows utilizing the GOSS SCADA system to detect abnormal conditions, which may be an indication of a major leak or damaged facilities. Leak survey also patrols our entire transmission system three times each year.

- Non-financial Benefits: Damage to Company reputation would require a post-incident public relations campaign.

- Summary of Financial Benefits (if applicable) and Costs: N/A

- Technical Evaluation/Analysis: Indirect inspection tools or techniques such as close-interval potential survey (CIS), alternating current voltage gradient survey (ACVG) and direct current voltage gradient survey (DCVG) detect holidays. Utilizing two indirect examination techniques, transmission pipeline integrity is ensured through completion of the External Corrosion Direct Assessment (ECDA) on every section of transmission main. When combined with direct inspection and repair or replacement of the gas main, active corrosion and leaks are preventable throughout the entire transmission system.

- Project Relationships (if applicable): N/A

- Basis for Estimate: Historical

Total Funding Level ($000):

Historical Spend

Actual 2011	Actual 2012	Actual 2013	Actual2014	Historic Year (O&M only)	Forecast 2015

Historical Elements of Expense

EOE	Actual 2011	Actual 2012	Actual 2013	Actual 2014	Historic Year (O&M only)	Forecast 2015
Labor						
M&S						
A/P						
Other						
Total						

Request ($000):

Request 2016	Request 2017	Request 2018	Request 2019	Request 2020
	$1,515	$3,097	$3,085	$3,093

Request by Elements of Expense

EOE	2016	2017	2018	2019	2020
Labor		$60	$120	$750	$750
M&S		$228	$456	$358	$358
A/P		$750	$1,499	$821	$861
Other		$85	$170	$102	$106
Overheads		$392	$852	$1,054	$1,018
Total		**$1,515**	**$3,097**	**$3,085**	**$3,093**

X	Capital
	O&M

2017 – Gas Operations

Project/Program Title	Transmission Main Leaks
Project Manager	Christian Martinez
Hyperion Project Number	2GD0162
Organization's Project Number	N/A
Status of Project	
Estimated Start Date	Ongoing
Estimated Completion Date	Ongoing
Work Plan Category	Strategic - System and Component Upgrades

Work Description:

Unrepaired gas leaks may pose a safety risk as the escape of natural gas inherently causes a potentially unsafe condition. Gas leaks can pose an even higher risk when they occur on gas mains which operate at high pressures. As a result, Con Edison treats all leaks on its transmission system as type 1 leaks. Per 16 NYCRR 255.811, once a type 1 leak is discovered, continuous action must be taken to secure the leak condition. This action generally involves a maintenance repair to the existing facility. However due to the high-stakes nature and design of the transmission system, it is sometimes necessary to execute a capital transmission main replacement in order to repair (retire) a leaking transmission pipe or fitting.

This multi-year program will be used for projects that will replace sections of transmission main containing leaks or defects, which cannot be made safe using a maintenance repair technique.

Justification Summary:

This program was added as a revision to the 2014 and 2015 capital budgets. During each of these years, one capital transmission main replacement project was completed in order make a permanent repair to a section of transmission main which was discovered to contain a leak or defect.

Supplemental Information:

- Alternatives: There are acceptable maintenance alternatives to pipe replacement such as split repair sleeves, grinding, high hats, leak clamps, hot tapping, and welded patch plates. However, each repair method is acceptable for only certain types of damage, in accordance with Con Edison maintenance procedures. Aside from these specific instances, pipe replacement is the only acceptable method.

- Risk of No Action: Risk of fire or explosion arises from workers (Company, contractor or other) who excavate and accidentally make contact with Con Edison's gas transmission main. Other potential causes of this type of incident might be gas transmission main damage that has gone undetected resulting in localized corrosion, or leaking of adjacent water lines that erode the gas pipe. These scenarios could create a leak that might lead to an explosion or fire.

  Public safety and service reliability could be imperiled by an incident of this nature. The cost of restoring damaged customer property, Company property and systems (gas, electric, or steam

structures), and non-Company utilities could also be significant. In addition, the Company might have to engage in an extensive effort to restore gas service to customers. This type of event could lead to increased oversight and/or penalties from regulatory agencies, which could mandate relocation of Company facilities or impose restrictions on gas pressures, both of which could adversely impact our operations.

The aforementioned risk of taking no action is tempered by existing pipeline monitoring programs. Gas Control continually monitors system pressures and flows utilizing the GOSS SCADA system to detect abnormal conditions, which may be an indication of a major leak or damaged facilities. Leak survey also patrols our entire transmission system three times each year.

- Non-financial Benefits: Mitigate risk and maintain safe, reliable service to our customers.

- Summary of Financial Benefits (if applicable) and Costs: Not applicable

- Technical Evaluation/Analysis: Most capital upgrades on transmission leaks require a section of transmission main, valve, regulator to be replaced. The pressures on our transmission system have a maximum allowable operating pressure of 245psig and 350 psig. The cost drivers for these capital upgrades are dependent on main size, which can be between 4"to 36"size mains.

- Project Relationships (if applicable): Not applicable, this project emerges as a capital response to an unforeseen transmission leak in the system.

- Basis for Estimate: The basis for this estimate is based on historical information for this program, which is $2 million per year.

Total Funding Level ($000):

Historical Spend

Actual 2011	**Actual 2012**	**Actual 2013**	**Actual 2014**	**Historic Year** (O&M only)	**Forecast 2015**
	$1,804	$5,258	$(352)		$1,500

Historical Elements of Expense

(Historical EOE breakout will only be completed for Steam projects/programs of $500 thousand or more and, for all other organizations, projects/programs of $1million or more.)

EOE	**Actual 2011**	**Actual 2012**	**Actual 2013**	**Actual 2014**	**Historic Year** (O&M only)	**Forecast 2015**
Labor		$282	$395			$135
M&S		$66	$160			$112
A/P		$633	$3,232	($283)		$714
Other		$250	$3			$73
Indirect		$573	$1,468	($69)		$466
Total		**$1,804**	**$5,258**	**($352)**		**$1,500**

Request ($000):

Request 2016	Request 2017	Request 2018	Request 2019	Request 2020
$2,001	$2,018	$2,058	$2,056	$2,062

Request by Elements of Expense

EOE	2016	2017	2018	2019	2020
Labor	499	500	500	500	500
M&S	238	238	238	238	238
A/P	484	490	504	547	574
Other	63	63	64	68	70
Overheads	717	727	752	703	680
Total	**$2,001**	**$2,018**	**$2,058**	**$2,056**	**$2,062**

X	Capital
	O&M

2017 – Gas Operations

Project/Program Title	TG – St. Ann's Tee to Hunts Point Downgrade
Project Manager	Anthony Leto
Hyperion Project Number	PR.10106054
Organization's Project Number	N/A
Status of Project	Project Not Started
Estimated Start Date	January 1, 2017
Estimated Completion Date	December 2018
Work Plan Category	Strategic- System and Component Upgrades

Work Description:

This is a multi-year project to downgrade a section of the gas transmission system that operates above 30% SMYS. With the completion of the Hunts Point to Hellgate project, which included the installation of approximately 14,000 feet of new 36-inch transmission pressure pipe, maximizing the outlet of the Iroquois gate station at Hunts Point, the existing 24-inch transmission main can be downgraded. The 2.7 miles of existing pipe will be downgraded to gas distribution pressure with a maximum allowable operating pressure of 99 psig.

The downgrade will include the installation of two (2) new regulator stations supplying the high pressure distribution from transmission pressure. One station will be located at St. Ann's Tee and the other will be located at Hunts Point. In addition, five (5) transmission to high pressure regulators (GR- 190, GR-160, GR-183, GR-198 and GR-116) will be retired and replaced with P.E. pipe. There are three (3) regulators that will be modified from "transmission pressure to low pressure regulators" to "high pressure to low pressure regulators" (GR- 184, GR-128 and GR-118).

Justification Summary:

This project accomplishes a number of system objectives in the Transmission Master Plan:

- Downgrade the existing pipe operating at 32% SMYS so that it will operate at distribution pressure.
- This downgrade is on older, less ductile pipe that may rupture before it leaks. Additionally, operating the system at less than 20% SMYS removes this line from the Federal DOT definition of transmission lines and related transmission pipeline integrity rules.

Supplemental Information:

- Alternatives: If this project isn't completed the existing infrastructure will need to be inspected and maintained. This will not enable us to reduce risk.
    - The section of transmission piping can be downgraded to a pressure where it would operate below 20% SMYS and still be above 125 psig. This would lower the risk associated with the main and remove it from the Federal DOT definition of transmission lines and related transmission pipeline integrity rules. The equipment in all eight (8) regulators would need

to be modified as well as the installation of two (2) new regulators to reduce the pressure from the adjacent 350 psig system. The maintenance costs would not be reduced and all of the specifications pertaining to gas mains operating above 125 psig would still apply.

- Risk of No Action: Without this project, the main would continue to operate at 32% SMYS. The risk associated with operating a brittle pipe that may rupture before it leaks would still exist. Without this we can't enhance the public safety and the reliability of our system.

- Non-financial Benefits: This project will reduce the consequences of a pipeline rapture and increases the flexibility in which the system as a whole can be operated.

- Summary of Financial Benefits (if applicable) and Costs: N/A

- Technical Evaluation/Analysis: Stoner gas transmission network analysis (gas model) demonstrates that the new 36-inch main is properly sized to meet the needs of transporting gas from the Iroquois gate station to our customers.

- Project Relationships (if applicable): The project is a companion project to Hunts Point to Hellgate project which was completed in 2013.

- Basis for Estimate: Historical

Total Funding Level ($000):

Historical Spend

Actual 2011	Actual 2012	Actual 2013	Actual 2014	Historic Year (O& M only)	Forecast 2015

Historical Elements of Expense

EOE	Actual 2011	Actual 2012	Actual 2013	Actual 2014	Historic Year (O& M only)	Forecast 2015
Labor						
M&S						
A/P						
Other						
Total						

Request ($000):

Request 2016	Request 2017	Request 2018	Request 2019	Request 2020
	$10,608	$7,741	$0	$0

Request by Elements of Expense

EOE	2016	2017	2018	2019	2020
Labor		$419	$299		
M&S		$1,594	$1,138		
A/P		$5,250	$3,745		
Other		$600	$429		
Overheads		$2,745	$2,130		
Total		**$10,608**	**$7,741**		

X	Capital
	O&M

2018 – Gas Operations

Project/Program Title	TG - Yorktown Gate Station Refurbishment
Project Manager	Anthony Leto
Hyperion Project Number	PR.21002820
Organization's Project Number	N/A
Status of Project	Project Not Started
Estimated Start Date	January 1 2018
Estimated Completion Date	Dec 31 2018
Work Plan Category	Strategic- System and Component Upgrades

Work Description:

The Yorktown Gate Station is located in a residential neighborhood and was constructed in 1959 within the confines of a house to blend in with the surrounding neighborhood. The facility is in need of both structural renovation and upgrades to replace regulation and metering equipment that is obsolete. This project will support load growth, and in a contingency situation will also support the loss of the Cortlandt Gate Station.

The current maximum capacity of the station is 500 dt/h. Upgrades to this station will extend the maximum capacity of the station to 650dth/hr. The following upgrades are required to achieve station improvements:

- Replacement and upsizing of regulators
- Upgrade to the metering
- Replacement of the heater with a high capacity heater.
- Replacement of existing station outlet piping with larger diameter pipe
- A replacement station monitor valve on the increased diameter station outlet piping
- A new Remote Terminal Unit (RTU)
- New communication, MPLS and Secure Wireless
- New instrumentation to support metering
- Overpressure protection

The structural work to the building is required and will include the following:

- A new asphalt roof
- New siding
- New driveway

Justification Summary:

Load growth and the ability to back up the Cortlandt Gate Station require that the capacity be increased from 500 dth/hr to 650 dth/hr. The increased station capacity provides for area load growth and in the event of the loss of the Cortlandt Gate Station, would provide back up for the High Pressure System.

The building was constructed in 1959 and is in need of renovation. The renovation is required to prevent further degradation to the building.

Supplemental Information:

- Alternatives: An alternative would be to build a new building and gate station on another piece of property. The building would need to be on the Algonquin Right of Way and at a suitable point on the High Pressure System that it could achieve the criteria of supplying the area growth and meeting the criteria of backing up Cortlandt Gate Station.

- Risk of No Action: If no actions are taken the station capacity would not keep pace with the area load growth and eventually the deliverability of the station capacity would be challenged. The station would also not be able to provide back up to High Pressure System in the event of the loss of the Cortlandt Gate Station.

- Non-financial Benefits: The increased station capacity will support area growth and the Yorktown Gate will provide backup to the Cortlandt Gate Station.

- Summary of Financial Benefits (if applicable) and Costs: N/A

- Technical Evaluation/Analysis: Synergi gas transmission network (Stoner- Gas Model) analysis was used to evaluate the High Pressure System as a result of the forecasted area growth. It was also used to evaluate the loss of the Cortlandt Gate Station.

- Project Relationships (if applicable): Cortlandt Gate Station Refurbishment

- Basis for Estimate: Historical

Total Funding Level ($000):

Historical Spend

Actual 2011	Actual 2012	Actual 2013	Actual 2014	Historic Year (O&M only)	Forecast 2015

Historical Elements of Expense

EOE	Actual 2011	Actual 2012	Actual 2013	Actual 2014	Historic Year	Forecast 2015

					(O&M only)	
Labor						
M&S						
A/P						
Other						
Total						

Request ($000):

Request 2016	**Request 2017**	**Request 2018**	**Request 2019**	**Request 2020**
$0	$0	$9,291	$0	$0

Request by Elements of Expense

EOE	**2016**	**2017**	**2018**	**2019**	**2020**
Labor			$359		
M&S			$1,366		
A/P			$4,495		
Other			$515		
Overheads			$2,556		
Total			**$9,291**		

X	Capital
	O&M

2017– Gas Operations

Project/Program Title	Newtown Creek Metering Station
Project Manager	Anthony Leto
Hyperion Project Number	MGD9803
Organization Project Number	N/A
Status of Project	Project Not Started
Estimated Start Date	January 1 2017
Estimated Completion Date	Dec 31 2017
Work Plan Category	Strategic- System and Component Upgrades

Work Description:

The Newtown Creek metering station is a bidirectional metering station that consists of multiple runs of orifice metering that is sequentially controlled based on the flow rate. This station is the custody transfer point between Con Edison and National Grid. This project will consist of replacing the orifice metering with ultrasonic metering and low flow metering, as required. There will be major piping modifications associated with the new metering, as well as electrical and instrumentation modifications and installations. To support the metering, a Remote Terminal Unit (RTU) with multi paths of communication, generally a Multiprotocol Label switching (MPLS), and secure wireless is required. The infrastructure of the station may have to be modified for the installation, which would include removal of the roof and reinstallation as well as any supporting infrastructure such as a monorail.

A flow control valve or valves will also be installed to regulate station flow. To support the installation of the control valve, piping modifications and electrical and instrumentation modifications will be necessary. The control valve would require an independent Remote Terminal Unit (RTU) with supporting MPLS and secure wireless communication.

Justification Summary:

The facility was constructed in 1951 and the metering in the station is obsolete and maintenance intensive. A single ultrasonic meter could be used to duplicate the range of the orifice metering. The ultrasonic meter would require less maintenance and be inherently more robust than the orifice metering. Orifice metering contains multiple fittings and valves and packing that may leak.

The addition of a control valve would allow Con Edison to control the flow rate to National Grid. The ability to control flow to National Grid would allow Con Edison to protect the Con Edison portion of the Gas Transmission System from poor pressure conditions.

Supplemental Information:

- Alternatives: There are no alternatives. The equipment is obsolete and is required to be replaced in order to ensure proper metering. Flow control enhancements will improve reliability since none currently exists.

- Risk of No Action: Incorrect gas metering with an increase in loss and unaccounted for (LAUF) gas in Gas Supply.

- Non-financial Benefits: The installation of flow control that currently does not exist would allow Gas Control to maintain adequate gas pressure within Con Edison's gas transmission system. Currently, the interconnect is a free flowing system that cannot be controlled.

- Summary of Financial Benefits (if applicable) and Costs: N/A

- Technical Evaluation/Analysis: Synergi (Stoner) analysis was used to evaluate the modification the flow control system would have on the Gas Transmission System.

- Project Relationships (if applicable): N/A

- Basis for Estimate: Historical

Total Funding Level ($000):

Historical Spend

Actual 2011	**Actual 2012**	**Actual 2013**	**Actual 2014**	**Historic Year** (O&M only)	**Forecast 2015**

Historical Elements of Expense

EOE	**Actual 2011**	**Actual 2012**	**Actual 2013**	**Actual 2014**	**Historic Year** (O&M only)	**Forecast 2015**
Labor						
M&S						
A/P						
Other						
Total						

Request ($000):

Request 2016	**Request 2017**	**Request 2018**	**Request 2019**	**Request 2020**
	$3,031	$0	$0	$0

Request by Elements of Expense

EOE	2016	2017	2018	2019	2020
Labor		$118			
M&S		$454			
A/P		$1,500			
Other		$174			
Overheads		$785			
Total		**$3,031**			

X	Capital
	O&M

2017 – Gas Operations

Project/Program Title	Cortlandt Gate Station Refurbishment
Project Manager	Anthony Leto
Hyperion Project Number	21554941
Organization's Project Number	N/A
Status of Project	Project Not Started
Estimated Start Date	January 1, 2017
Estimated Completion Date	December 31, 2017
Work Plan Category	Strategic- System and Component Upgrades

Work Description:
The Cortlandt Gate Station is located in a residential neighborhood and was constructed in 1955. The facility is in need of upgrades to replace regulating and metering equipment that is obsolete. This project will also support load growth and in a contingency situation will support the loss of the Yorktown Gate Station.

The current maximum capacity of the station is 232 dt/h. Upgrades to this station will extend the maximum capacity of the station to 500dt/hr. The following upgrades are required for station improvement:

- Replacement and upsizing of regulators
- Upgrade to the metering
- Replacement of the heater with a high capacity heater
- Replacement of existing station outlet piping with larger diameter pipe
- A replacement station monitor valve on the increased diameter station outlet piping
- A new Remote Terminal Unit (RTU)
- New communication, MPLS and Secure Wireless
- New instrumentation to support metering
- Overpressure protection

Justification Summary:

Load growth and the ability to back up the Yorktown Gate Station require that the capacity be increased from 232dt/h to 500dt/h. The increased station capacity provides for area load growth and in the event of the loss of the Yorktown Gate Station would provide back up for the High Pressure System.

Supplemental Information:

- Alternatives: An alternative would be to build a new building and gate station on another piece of property. The building would need to be on the Algonquin Right of Way and at a suitable point on the High Pressure System that it could achieve the criteria of supplying the area growth and meeting the criteria of backing up Yorktown Gate Station.

- Risk of No Action: If no actions are taken the station capacity would not keep pace with the area load growth and eventually the deliverability of the station capacity would be challenged. The station would also not be able to provide back up to High Pressure System in the event of the loss of the Yorktown Gate Station.

- Non-financial Benefits: The increased station capacity will support area growth and the Cortlandt Gate will provide backup to the Yorktown Gate Station.

- Summary of Financial Benefits (if applicable) and Costs: N/A

- Technical Evaluation/Analysis: Synergi gas transmission network (Stoner- Gas model) analysis was used to evaluate the High Pressure System as a result of the forecasted area growth. It was also used to evaluate the loss of the Yorktown Gate Station.

- Project Relationships (if applicable): Yorktown Gate Station Refurbishment

- Basis for Estimate: Historical

Total Funding Level ($000):

Historical Spend

Actual 2011	**Actual 2012**	**Actual 2013**	**Actual 2014**	**Historic Year** (O&M only)	**Forecast 2015**

Historical Elements of Expense

EOE	**Actual 2011**	**Actual 2012**	**Actual 2013**	**Actual 2014**	**Historic Year** (O&M only)	**Forecast 2015**
Labor						
M&S						
A/P						
Other						
Total						

Request ($000):

Request 2016	Request 2017	Request 2018	Request 2019	Request 2020
$0	$9,092	$0	$0	$0

Request by Elements of Expense

EOE	2016	2017	2018	2019	2020
Labor		360			
M&S		1,367			
A/P		4,500			
Other		511			
Overheads		2,354			
Total		**9,092**			

X	Capital
	O&M

2017 – Gas Operations

Project/Program Title	Greenburgh Yard Refurbishment
Project Manager	TBD
Hyperion Project Number	10106057
Organization's Project Number	N/A
Status of Project	Project Not Started
Estimated Start Date	January 1 2017
Estimated Completion Date	Dec 1 2017
Work Plan Category	Strategic- System and Component Upgrades

Work Description:

Gas distribution regulator stations GR-516 and GR-519 are situated within "in plant" property on White Plains Tarrytown Road (State Route 119) in Greenburgh that is currently owned by Con Edison. The current parcel of land was only part of an overall larger parcel of land that once supported a manufactured gas holder site, as well as compressor equipment used to shuttle large amounts of manufactured gas to other storage holders within Westchester County. Some of this manufactured gas distribution system equipment is still active, such as the 16" cast iron "backbone" outer loop medium pressure system. The location is commonly known as the "Greenburgh Yard", and today is predominately used as the workout location, and equipment storage for Substation Maintenance operations. Gas Operations has both in plant and out plant piping traversing through the yard, as well as active gas assets including the two regulator stations, and the controls for an ROV (Remote Operated Valve). Whenever a complaint of a gas leak is received at the site, a very arduous, and extremely labor intensive effort is undertaken using "soft excavation" techniques to initially identify what possible facility could be the leaking culprit, and where the suspected buried gas facility may actually be located. Once established, the very time consuming and expensive process of 100% hand excavation is the norm to expose the maze of networked gas assets so a repair can be conducted.

Because of the steep history with manufactured gas, the years of retrofits and piping upgrades have left numerous abandoned piping elements, sections of obsolete main, unused and no longer desired hard piped by-pass connections, older style repairs, buried flange connections, earlier repair remnants and a plethora of buried facilities that no longer serve as functional piping components for today's gas distribution / transmission systems.

In order to eliminate the obsolete and undesired buried piping configurations, a simplification effort will be undertaken, along with new regulator station piping. Since the two regulator stations are supplied by transmission pressure supplies, the inter-stage piping for both these stations will be designed to transmission pressure criteria. With the network of active and abandoned piping being so extensive, exploratory excavations are expected to be required just to confirm piping accuracy before any formal design work can be executed to correct and eliminate the existing ineffective piping elements. Compounding this challenge is the fact that some parts of the property are currently considered a Manufacture Gas Plant (MGP) site as a result of the location's history with manufactured gas assets.

The expected work scope at this time is to eliminate and remove all pre-1972 buried piping, which includes bare steel, cast iron, flange end gate and plug valves, transmission piping, a field fabricated second stage regulator vault housing two, twin run large regulator second stage piping setups, ineffective and leaking

buried by-pass piping, as well as radial main elements which are no longer required. This could then support one of three possible reconstruction scenarios:

- The first scenario is twin new independent manholes for each of the second stage active regulators with new transmission inter-stage piping connections.
- A second possible scenario is a replacement of the existing configuration, in which a common oversized single vault is fabricated which will support shared buried structural components for each of the second stage piping configurations.
- Or a third scenario is the design and construction of an above ground structure that would support a sound proof building which would support sufficient space for piping and the associated supervisory control equipment.

Justification Summary:

Because of the older piping configurations, the transmission by pass piping connections do not meet today's design standards, and valve passage through a few of the old flange connected by pass valves has occurred. Gas Transmission Engineering previously completed an emergency replacement of the piping outside of the yard, as well as the abandonment of an orifice meter, so some of the original hard pipe by pass connections directly to a transmission supply system has been eliminated, but interconnections between regulators, inter stage and outlet piping still abound.

Supplemental Information:

- Alternatives: The elements identified for corrective action need to be removed from service, and replaced / reconfigured. The current devices are showing signs of stress and leakage. Eventually they will no longer be able to be temporarily repaired, and will finally fail. There is no known alternative solution other than to remove / replace the aged units.

- Risk of No Action: Risk of system leakage, over pressurization, fire or explosion can be associated with these component failures. If direction to excavate and conduct spot repairs is continued the same set of risks is repeated, but in addition the situation is compounded because of the possibility of Company or contractor forces making accidental contact, or damage to one of the known, or unknown buried assets in the areas of concern highlighted above.

- Non-financial Benefits: Unforeseen damage to the critical assets negatively impacts the company, as well as potentially creating a serious operating condition for the gas distribution system. In addition, by the elimination of earlier assets and abandoned facilities, the complexity of having both the potential of an MGP site, coupled with equipment that has weak historic documentation be taken out of the equation. Otherwise an unforeseen leak or damage could negatively impact the company's ability to conduct swift and effective repair actions.

- Summary of Financial Benefits (if applicable) and Costs: N/A

- Technical Evaluation/Analysis: Gas specification design basis

- Project Relationships (if applicable): N/A

- Basis for Estimate: (Note: These are only "order of magnitude" estimates) Engineering / Design activities associated with replacement of existing single manhole with combined second stage dual pressure regulating piping arrangements and inter-stage piping $200K, replace with two single manholes each containing dual run piping and new inter-stage piping $600K, integrate MGP remediation / Hazmat techs for excavations for both exploratory and final project scope $200K. Approximate combined Capital / Retirement cost $1.0M

Total Funding Level ($000):

Historical Spend

Actual 2011	Actual 2012	Actual 2013	Actual 2014	Historic Year (O&M only)	Forecast 2015
			$200		

Historical Elements of Expense

EOE	Actual 2011	Actual 2012	Actual 2013	Actual 2014	Historic Year (O&M only)	Forecast 2015
Labor						
M&S						
A/P						
Other						
Total						

Request ($000):

	Request 2016	Request 2017	Request 2018	Request 2019	Request 2020
	$0	$8,082	$0	$0	$0

Request by Elements of Expense

EOE		2016	2017	2018	2019	2020
Labor			$319			
M&S			$1,215			
A/P			$4,000			
Other			$457			
Overheads			$2,091			
Total			**$8,082**			

X	Capital
	O&M

2016 – Gas Operations

Project/Program Title	Westchester / Bronx Border to White Plains
Project Manager	John Powers
Hyperion Project Number	PR.7GD9817
Organization's Project Number	n/a
Status of Project	Ongoing Program
Estimated Start Date	Ongoing Program
Estimated Completion Date	Ongoing Program
Work Plan Category	Strategic- System and Component Upgrades

Work Description:

This work consists of the multi-year project to install approximately 54,000 feet of new 36 inch steel transmission pressure main looping the existing 24 inch steel transmission pressure main from the Westchester/Bronx Line to the Tennessee White Plains gate station outlet. Details include:

- Units per Year: approximately 5,500 feet per year
- Mandatory: This is a crucial main identified by the Transmission Master Plan to satisfy G-8051, the Gas System Design Criteria specification.
- High-level schedule: 5,500 feet per year for ten (10) years.

Justification Summary:

This project accomplishes a number of system objectives in the Transmission Master Plan:

- It delivers Canadian gas from the Hunts Point station further into Westchester diversifying the supply.
- It helps reduce dependency on the critical White Plains gate station and the associated Gulf Coast gas supply.
- It helps offset the loss of 134th St.
- It allows the future downgrade of the MAOP of the existing line to operate at less than 20% SMYS. This future downgrade would be on the older brittle pipe that may rupture before it leaks.

The 245-psig system consists of two mains - a 24 inch main operating at 26% of SMYS (1940's vintage) that connects the Hunts Point Yard to the Tennessee White Plains gate station, and a 20 inch main operating at 18% of SMYS (1970's vintage) that loops the 24 inch main from the Hunts Point yard to the Westchester/Bronx line. There are approximately 125,000 customers supplied by the Hunts Point – White Plains 245 PSIG system. Supplying the system from the south is the Hunts Point regulator station (GR-199), that reduces pressure from the 350-psig system and is supplied from Transco and the Iroquois gate station. Supplying the system from the north is the Tennessee White Plains gate station. Installing the proposed main will create a continuous parallel system from Hunts Point in the Bronx to the White Plains gate station in Westchester.

The 24-inch transmission main is the oldest on our system and is constructed of lower strength steel joined with mechanical couplings, about 2,000 of which are not reinforced. There are 66 drip pots on the 24-inch main and these provide unnecessary potential points of failure. This reinforcement will allow us to systematically downgrade the existing 24-inch main. This 24-inch main also feeds 22 distribution system regulator stations that can be supplied at pressures substantially lower than the current 245-psig MAOP. Looping this section will allow us to downgrade the existing 24-inch main and operate at stress levels less than 20% of SMYS. The Design Criteria calls for all transmission pipes installed prior to 1970 to operate at less than 20% SMYS by 2024. This project will contribute towards this objective. Additionally, operating the system at less than 20% SMYS removes these lines from the Federal DOT definition of transmission lines and related transmission pipeline integrity rules.

Supplemental Information:

- Alternatives: Several route alternatives were analyzed – Route 22, Route 100, Bronx River Pkwy, and a fourth hybrid alternative in local streets. These routes were either non cost effective or non-constructible.

- Risk of No Action: At some point in the future, the 24" main may develop leaks as it has in the past. By not installing this main, we expose ourselves to future leaks or a potential rupture on this main, as it is operating at one of the highest SMYS levels in our system.

- Non-financial Benefits: This project will reduce the consequences of various risks and increases the flexibility in which the system as a whole can be operated. In addition, the 24-inch transmission main is the oldest on our system and is constructed of lower strength steel joined with mechanical couplings, about 2,000 of which are not reinforced. There are 66 drip pots on the 24-inch main and these provide unnecessary potential points of failure. This reinforcement will allow us to systematically downgrade this older brittle main.

- Summary of Financial Benefits (if applicable) and Costs: The total capital to complete this project is approximately $250 million. This reinforcement will greatly enhance system capacity and provide supply reliability (contingency mitigation) for firm and interruptible customers in the Bronx and Westchester that are currently served by a system operating under a zero contingency mode at temperatures below 30 degrees F. The project increases system reliability on the loss of single gate station. This project eliminates any customers lost due to the loss of the White Plains Gate station (75,000) or the loss of the Hunts Point regulator (315,000). If a condition occurred where one of these sources was lost on a design day, the gas customers previously mentioned can be adversely affected. Restoring gas service to these customers would be a time consuming, labor-intensive effort, greatly reducing our ability to respond to other calls, incidents and events. Furthermore, this restoration effort will most likely consume resources from other neighboring utilities, hampering their normal operations. Numerous customers would be without life sustaining; essential amenities such as heat and hot water for an extended period of time, and commercial businesses would suffer economically and may even be forced out of business. Resulting claims to the Company from such an event could be enormous, in addition to sustaining tremendous damage to its reputation. Installing this main mitigates these potential liabilities.

- Technical Evaluation/Analysis: Stoner gas transmission network (gas model) analysis determined the size pipe required to realize the full supply potential.

- Major assumptions relating to this project are:
  - Contractor price for the installation of the facility as well as the cost of material
  - Length of the project may vary (total footage) due to sub-surface interference and the generation of a viable route for the transmission pressure main through the streets or through private property.
  - Any community resistance is overcome to the point that it doesn't impact the project.

- Project Relationships (if applicable): The project is part of the Gas Transmission Master Plan. The Hunts Point Gate Upgrade would enhance the takeaway ability of this main.

- Basis for Estimate: Historical

Total Funding Level ($000):

Historical Spend

Actual 2011	Actual 2012	Actual 2013	Actual 2014	Historic Year (O&M only)	Forecast 2015
	$2,000	$6,000	$25,000		

Historical Elements of Expense

EOE	Actual 2011	Actual 2012	Actual 2013	Actual 2014	Historic Year (O&M only)	Forecast 2015
Labor						
M&S						
A/P						
Other						
Total						

Request ($000):

Request 2016	Request 2017	Request 2018	Request 2019	Request 2020
$23,000	$40,413	$41,292	$41,222	$41,337

Request by Elements of Expense

EOE	2016	2017	2018	2019	2020
Labor	$919	$1,600	$1,600	$1,600	$1,600
M&S	$3,493	$6,076	$6,076	$6,076	$6,076
A/P	$11,659	$20,000	$19,979	$20,297	$20,573
Other	$1,321	$2,274	$2,272	$2,300	$2,324
Overheads	$5,608	$10,463	$11,365	$10,949	$10,764
Total	**$23,000**	**$40,413**	**$41,292**	**$41,222**	**$41,337**

X	Capital
	O&M

2017 – Gas Operations

Project/Program Title	TG - Bronx River Tunnel to Bronx Westchester Border
Project Manager	Anthony Leto
Hyperion Project Number	21002824
Organization's Project Number	N/A
Status of Project	Project Not Started
Estimated Start Date	Jan 1, 2017
Estimated Completion Date	Jun 4, 2021
Work Plan Category	Strategic- System and Component Upgrades

Work Description:

The scope of work requires the installation of approximately seven (7) miles of 36-inch, 350 psig transmission main that will replace the existing 1948, 24-inch, 245 psig transmission main from the Bronx River Tunnel to the Bronx Westchester Border. The 36-inch transmission main will connect to the already in progress Bronx Boarder to White Plains 36-inch, 350 psig main (sectionW2A) in the north and the planned replacement the 24-inch main located in the Bronx River Tunnel in the south, thereby connecting directly to the Hunts Point 350 psig system. The scope of work will require the installation of valves as required by the NYCRR Part 255. A number of the valves installed would be remotely operated valves (ROVs) as required to meet the Con Edison Design Criteria. The installation will also require the replacement or reconnection of supply to eighteen (18) existing regulators, many of which would be from straddles.

Justification Summary:

This replacement will provide many significant enhancements.

- The Hunts Point Compressor will be eliminated
- Regulator GR-199 will be eliminated
- Regulator ER-199 will be eliminated
- The 245 psig Super Monitor overpressure protection will be eliminated at Hunts Point
- A 36-inch, 350 psig system from White Plains to Hunts Point will enhance operation of the transmission system allowing for flexibility of economic dispatch of various sources of gas as well as facilitate the addition of another gate station along the Bronx-Westchester main.
- A 36-inch, 350 psig system from White Plains to Hunts Point will provide for enhancement of loss of a gate station should the supply of gas from a pipeline be interrupted. The larger diameter main is crucial to withstanding the loss of the White Plains Gate Station and to withstand the isolation of a section of transmission main along the southern route of this line.
- The 36-inch will operate at less than 20% SMYS therefore supplying safe, reliable gas service to the firm gas customer.
- The existing 24-inch main contains approximately sixty four (64) high degree miters not allowed by either NYCRR Part 255 or 49 CFR Part 192 as well as many lower degree miters that would be eliminated.
- The construction practices in 1948 were not as robust as current methods. The butt welds, approximately 780, used to join the 24-inch main were not subject to the present day nondestructive examination standards.

- The construction of the 24-inch main also used approximately 170 Dresser couplings that are subject to leakage.
- The 24-inch main was constructed with approximately 26 drip pots that have leak prone appurtenances.
- The original pressure test of the 24-inch main does not meet the present day standards. The main was originally tested with air at a pressure of approximately 1.22 times the MAOP and present requirements require the use of water at 1.5 times the MAOP.
- The material of the existing 24-inch main has been evaluated for facture toughness. The new facility would have much greater fracture toughness and will provide a safer delivery of natural gas.
- The new 36-inch main could be cathodically protected using anode beds as opposed to rectifiers.

Supplemental Information:

- Alternatives: Alternative to installation of the 36-inch would be to cut out miters, cut out drips and install sleeves over couplings. This would require up to 260 repairs to the 24-inch main. Some of these repairs would require cutouts that would put the system in a compromised condition. These projects could only take place at certain times of year. This scheduling would have to be done during the shoulder months (March to May and September to November). In addition, the entire length of pipe (7 miles) would need to be hydrostatically tested in increase its MAOP to 350 psig.

- Risk of No Action: Construction of the 24-inch main began in 1948 before the development of the codes and standards applied to gas transmission systems. The main has been adequately cathodically protected from corrosion but the construction practices make the main not very well suited for a NYCRR Part 255 or 49 CFR Part 192 class IV area.

- Non-financial Benefits: This project will reduce risk associated with pipe materials and construction practices used at the time of installation. It will enhance economic operation of the Gas Transmission system and enhance the Transmission Systems ability to mitigate the loss of a gate station. There will be less major equipment to operate that is subjected to failure, such as the pipeline compressor and GR-199.

- Summary of Financial Benefits (if applicable) and Costs: N/A

- Technical Evaluation/Analysis: Synergi (Stoner- Gas Model) gas transmission network analysis was used to evaluate the modification of the Gas Transmission System. Samples of the piping have been evaluated for fitness of service per ASME B31G and for fracture toughness.

- Project Relationships (if applicable): To obtain the complete benefit of this project the following related projects would need to be completed. Completion of the Mount Vernon to White Plains 36-inch, 350 psig main (section W2A) which is currently in progress, the replacement of the Bronx Tunnel 24-inch, 245 psig main.

- Basis for Estimate: N/A

Total Funding Level ($000):

Historical Spend

Actual 2011	Actual 2012	Actual 2013	Actual 2014	Historic Year (O&M only)	Forecast 2015

Historical Elements of Expense

EOE	Actual 2011	Actual 2012	Actual 2013	Actual 2014	Historic Year (O&M only)	Forecast 2015
Labor						
M&S						
A/P						
Other						
Total						

Request ($000):

Request 2016	Request 2017	Request 2018	Request 2019	Request 2020
	$25,260	$25,809	$25,763	$25,835

Request by Elements of Expense

EOE	2016	2017	2018	2019	2020
Labor		$997	$997	$1,000	$1,000
M&S		$3,785	$3,785	$3,798	$3,798
A/P		$12,458	$12,445	$12,686	$12,858
Other		$1,481	$1,480	$1,437	$1,453
Overheads		$6,539	$7,102	$6,842	$6,726
Total		**$25,260**	**$25,809**	**$25,763**	**$25,835**

X	Capital
	O&M

2018 – Capital - Gas Operations

Project/Program Title	Bronx River Tunnel and Easement
Project Manager	Anthony Leto
Hyperion Project Number	10106059
Organization's Project Number	
Status of Project	Project Not Started
Estimated Start Date	January 1, 2018
Estimated Completion Date	December 31, 2019
Work Plan Category	Strategic - System and Component Upgrades

Work Description:

The existing 1948, 24-inch transmission main in the Bronx River Tunnel will be replaced by either the installation of a new 36-inch main within the tunnel or by horizontal directionally drilling (HDD) with a new 36-inch main alongside the tunnel. The main will connect the transmission piping on the Hunts Point side (west side) of the Bronx River to the proposed 36-inch main from White Plains to Bronx Tunnel (east side), W2A and X3.

Justification Summary:

This replacement will provide many significant enhancements.

- A 36-inch, 350 psig system from White Plains to Hunts Point will provide greater reliability by withstanding the loss of a gate station should the source of gas supply from a gate station be interrupted.
- The 36-inch gas main will operate at less than 20% Specified Minimum Yield Strength (SMYS) therefore supplying safe, reliable service to all firm gas customers.
- The original pressure test of the 24-inch main does not meet the present day standards. The main was originally tested with air at a pressure of approximately 1.2 times the Maximum Allowable Operating Pressure (MAOP) and present requirements require new facilities to be hydrostatically tested at 1.5 times MAOP.
- A continuous, 36-inch 350 psig system from White Plains to Hunts Point connected to the existing 36-inch transmission piping from Hunts Point to Astoria Queens will enhance operation of the transmission system allowing for flexibility of economic dispatch of various sources of gas.
- The Hunts Point Compressor will be eliminated reducing all expenses associated with the facility
- Regulator GR-199 will be eliminated
- Regulator ER-199 will be eliminated
- The 245 psig Super Monitor overpressure protection will be eliminated at Hunts Point

New gas mains will be constructed of steel pipe with much greater facture toughness than the existing 1948 gas transmission main.

Supplemental Information:

- Alternatives: There are no alternatives. In order to take full advantage of the proposed replacement of Hunts Point to Bronx Boarder with a 36-inch, 350 psig main (section X3) and the ongoing Bronx

Boarder to White Plains 36-inch, 350 psig main (W2A) installation, the Bronx Tunnel upgrade is required.

- Risk of No Action: If no action is taken, the newly installed Bronx to White Plains 36-inch- 350 psig (sections W2A and X3) will have to be operated at 245 psig. Operating at the lower MAOP of 245 psig and not increasing the capacity of the pipe in the tunnel would create a large pressure drop across the Bronx River Tunnel. The pipe installed in the tunnel does not meet the present day requirements as far as pressure testing, welding and pipe material specifications.

- Non-financial Benefits: This project will reduce risk associated with materials and practices used at the time of construction. It will enhance economic operation the Gas Transmission system and enhance the Transmission Systems ability to mitigate the loss of a gate station. There will be less major equipment to operate and maintain such as the pipeline compressor and GR-199 thereby reducing gas system issues associated with equipment failure.

- Summary of Financial Benefits (if applicable) and Costs: N/A

- Technical Evaluation/Analysis: Synergi (Stoner) analysis was used to evaluate the modification of the Gas Transmission System.

- Project Relationships (if applicable): To obtain the complete benefit of this project the following related projects would need to be completed: Completion of the presently on going Mount Vernon to White Plains 36-inch, 350 MAOP installation and the replacement of the Bronx Tunnel to Bronx border 24-inch, 245 psig main with a 36-inch, 350 psig main.

- Basis for Estimate: Historical cost for transmission system reinforcements was used to calculate this estimate

Total Funding Level ($000):

Historical Spend

Actual 2011	Actual 2012	Actual 2013	Actual 2014	Historic Year (O&M only)	Forecast 2015
N/A	N/A	N/A	N/A	N/A	N/A

Historical Elements of Expense

EOE	Actual 2011	Actual 2012	Actual 2013	Actual 2014	Historic Year (O&M only)	Forecast 2015
Labor	N/A	N/A	N/A	N/A	N/A	N/A
M&S	N/A	N/A	N/A	N/A	N/A	N/A
A/P	N/A	N/A	N/A	N/A	N/A	N/A
Other	N/A	N/A	N/A	N/A	N/A	N/A
Total	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**

Request ($000):

Request 2016	Request 2017	Request 2018	Request 2019	Request 2020
N/A	$0	$15,485	$12,368	$0

Request by Elements of Expense

EOE	2016	2017	2018	2019	2020
Labor	N/A	N/A	$599	$480	N/A
M&S	N/A	N/A	$2,277	$1,823	N/A
A/P	N/A	N/A	$7,492	$6,090	N/A
Other	N/A	N/A	$856	$690	N/A
Overheads	N/A	N/A	$4,261	$3,285	N/A
Total	**N/A**	**N/A**	**$15,485**	**$12,368**	**N/A**

X	Capital
	O&M

2017- Gas Operations

Project/Program Title	Astoria Transmission Main Reinforcement OTG
Project Manager	Anthony Leto
Project Number	10106055
Status of Project	Project Not Started
Estimated Start Date	January 2017
Estimated Completion Date	December 2017
Work Plan Category	Strategic- System and Component Upgrades

Work Description:

In 2008, a new 36-inch, 350 psig maximum allowable operating pressure (MAOP) transmission main was installed in the Astoria Tunnel connecting the Bronx to the 1st Ward of Queens. The new 36-inch main was terminated on 20th Ave and Shore Boulevard. It is connected to the existing 24-inch, 350 psig MAOP transmission main utilizing a spherical tee. In order to take full advantage of the planned transmission system reinforcement for Oil to Gas (OTG), the existing 20-inch piping that supplies gas to 3rd Ward of Queens will need to be replaced with a new 36-inch transmission main. As part of this replacement of 610 feet of 20-inch main, a number of main connections will need to be reestablished.

These connections include:

- The primary 20-inch main supplying the LNG Plant and NRG will need to be moved from the existing 20-inch main to the new 36-inch main with a newly installed Remotely Operated Valve (ROV)
- The 24-inch main supplying the NYPA Facility will also need to be moved to the 36-inch main along with a newly installed ROV
- The 16-inch main to Astoria 20 will need to be relocated to the new 36-inch transmission main along with a newly installed ROV
- The 12-inch main to Astoria 30, 40 and 50 will need to be relocated to the 36-inch transmission main along with a newly installed ROV
- The 12-inch main supplying regulating station GR-300 will have to be moved to the new 36-inch main.

The 16-inch LNG by-pass main (alternate feed) will need to be moved to the 36-inch main with a newly installed ROV.

Justification Summary:

The replacement of 610 feet of 1951 vintage, 20-inch, 350 psig main, with all the services transferred to a new 36-inch, 350 psig main, will provide the following benefits:

- The 36-inch main will operate at less than 20% Specified Minimum Yield Strength (SMYS), therefore providing safe, reliable service. The existing section of main will no longer meet the Federal DOT definition of transmission lines and will operate as a distribution main, operating at greater than 125 psig. The current main operates at 26.7% SMYS.

- The new gas main construction will consist of coated, ½ inch thick steel with a yield strength of 60,000 psi versus the existing 20-inch main with a wall thickness of 0.375 inch and a yield strength of 35,000 psi
- The original pressure test of the 20-inch main does not meet the present day standards. The main was originally pressured tested with air at a test pressure of approximately 1.2 times the MAOP and current standards require new main installation to be hydrostatically tested 1.5 times the MAOP.
- The material of the existing 20-inch main has been evaluated for facture toughness and found to have fracture toughness less than newly installed gas mains.
- Facilitate the multi-year project (Astoria Transmission Main Reinforcement OTG), to replace the 20-inch main through Astoria, Queens towards the 3rd Ward of Queens. This supplementary project is designed to provide adequate pressure to the firm gas customers in the 3rd Ward of Queens (150 psig minimum pressure)

Supplemental Information:

- Alternatives: One alternative is to leave the existing facilities, and construct a parallel transmission main to minimize the pressure drop along the line. This alternative does not reduce the risk associated with the 20-inch main that is operating above 20% SMYS and actually increases the overall risk associated with the gas transmission system. An additional section of main increases the overall footprint and exposure to 3rd party damage. This alternative still leaves the transmission system exposed to the threat of an extensive outage to facilities and firm customers in both the 2nd and 3rd Wards of Queens.

- Risk of No Action: No action will leave old, undersized pipe and fittings in the area of the Astoria Complex. This will result in not being able to take full advantage of the Astoria Transmission Main Reinforcement OTG project. As designed, the 3rd Ward of Queens will experience pressures that are below the design criteria.

- Non-financial Benefits: The new pipe will reduce pressure drop associated with the complex flow arrangement present in that area. The new piping will provide safer, reliable service to both Con Edison's firm gas customers as well as National Grid's firm gas customers located in the 2nd Ward of Queens.

- Summary of Financial Benefits (if applicable) and Costs: This project will support additional demand for increased load from oil to gas conversions.

- Technical Evaluation/Analysis: Synergi (Stoner) analysis was used to evaluate the modification of the Gas Transmission System. Samples of the piping have been evaluated for fitness of service per ASME B31G and for fracture toughness.

- Project Relationships (if applicable): The Astoria Transmission Main Reinforcement OTG project is related to this project as it would extend the replacement of 20-inch pipe east on 20th Avenue.

- Basis for Estimate: Historical cost for transmission main reinforcements was used to calculate this estimate.

Total Funding Level ($000):

Historical Spend

Actual 2011	Actual 2012	Actual 2013	Actual 2014	Historic Year (O&M only)	Forecast 2015

Historical Elements of Expense

(Historical EOE breakout will only be completed for Steam projects/programs of $500 thousand or more and, for all other organizations, projects/programs of $1 million or more.)

EOE	Actual 2011	Actual 2012	Actual 2013	Actual 2014	Historic Year (O&M only)	Forecast 2015
Labor						
M&S						
A/P						
Other						
Total						

Request ($000):

Budget 2015	Request 2016	Request 2017	Request 2018	Request 2019	Request 2020
		$10,103	$0	$0	$0

Request by Elements of Expense

EOE	2015	2016	2017	2018	2019	2020
Labor			$400			
M&S			$1,519			
A/P			$5,000			
Other			$568			
Overheads			$2,616			
Total			**$10,103**			

X	Capital
	O&M

2017 – Gas Operations

Project/Program Title	OTG Transmission Main Reinforcement
Project Manager	Anthony Leto
Hyperion Project Number	20473043
Organization's Project Number	N/A
Status of Project	Planning
Estimated Start Date	January 2017
Estimated Completion Date	December 2035
Work Plan Category	Gas Transmission Projects

Work Description:
The scope of work requires installation of approximately 12,650 feet of 36-inch, 350 psig transmission main (section Q3) that will replace the existing 20-inch, 350 psig transmission main from the Astoria Complex to the Grand Central Parkway. The scope of work requires the installation of valves as required by the NYCRR Part 255. A number of the valves installed will be remote operated valves (ROV) as required to meet Con Edison's Design Criteria for risk mitigation. The installation will also require reestablishing the connections to existing regulator stations via a straddle connection. This is a multi-year project that is to be done over the time frame listed.

Year	Queens Reinforcement
2017	1,950'
2018	1,950'
2019	800'
2020	800'
2021	800'
2022	800'
2023	800'
2024	700'
2025	800'
2026	500'
2027	500'
2028	500'
2029	500'
2030	500'
2031	500'
2032	500'
2033	500'

Justification Summary:
The installation of 36-inch, 350 psig Maximum Allowable Operating Pressure (MAOP) pipe will provide the following enhancements:

- A minimum pressure of 150 psig would be maintained in the 3rd Ward of Queens (design day). The minimum pressure is required to maintain proper inlet pressure to the distribution regulator stations and supply uninterrupted gas service to the firm gas customers.
- The 36-inch main would operate at less than 20% Specified Minimum Yield Strength (SMYS) therefore supplying safe, reliable gas service to firm customers.
- The original pressure test of the 20-inch main does not meet present day standards. The main was originally tested with air at a pressure of approximately 1.2 times the MAOP and present requirements requires the use of water at 1.5 times the MAOP
- The existing 20-inch main will be replaced with a 36-inch steel main with much greater fracture toughness and cathodically protected, ½ inch wall pipe.

Supplemental Information:

- Alternatives: No alternatives. Based on the proposed 20-year gas forecast, there is no alternative to replacement of the Astoria 20-inch main (section Q3). Without this project, minimum gas pressure would not be maintained and gas supply to firm customers would be interrupted.

- Risk of No Action: No Action would result in poor pressure in the 3rd Ward of Queens and an interruption of gas supply to firm customers.

- Non-financial Benefits: This project will reduce risk associated with pipe materials and construction practices used at the time of construction. The re-enforcement is required in order for the Gas Transmission System pressure to meet the Design Basis requirement of a minimum of 150 psig on a design day. A portion of Q3 would be removed from the Transmission portfolio therefore there would be fewer pipes subject to pipeline intercity rules.

- Summary of Financial Benefits (if applicable) and Costs: This project will support additional demand for increased load from oil to gas conversions.

- Technical Evaluation/Analysis: Synergi (Stoner) analysis was used to evaluate the modification of the Gas Transmission System. Samples of the piping have been evaluated for fitness of service per ASME B31G and for fracture toughness.

- Project Relationships (if applicable): N/A

- Basis for Estimate: Historical cost for transmission main reinforcements was used to calculate this estimate.

Total Funding Level ($000):

Historical Spend

Actual 2011	Actual 2012	Actual 2013	Actual 2014	Historic Year (O&M only)	Forecast 2015

Historical Elements of Expense

(Historical EOE breakout will only be completed for Steam projects/programs of $500 thousand or more and, for all other organizations, projects/programs of $1 million or more.)

EOE	Actual 2011	Actual 2012	Actual 2013	Actual 2014	Historic Year (O&M only)	Forecast 2015
Labor						
M&S						
A/P						
Other						
Total						

Request ($000):

Request 2016	Request 2017	Request 2018	Request 2019	Request 2020
	$11,820	$12,077	$7,213	$6,200

Request by Elements of Expense

EOE	2016	2017	2018	2019	2020
Labor		$468	$467	$280	$240
M&S		$1,777	$1,776	$1,063	$911
A/P		$5,850	$5,844	$3,552	$3,086
Other		$665	$667	$402	$349
Overheads		$3,060	$3,323	$1,916	$1,614
Total		**$11,820**	**$12,077**	**$7,213**	**$6,200**

X	Capital
	O&M

2019 - Gas Operations

Project/Program Title	Millennium - Lower Westchester Interconnect
Project Manager	Anthony Leto
Project Number	21680791
Status of Project	Planning
Estimated Start Date	January 2019
Estimated Completion Date	December 2020
Work Plan Category	Strategic

Work Description:

To connect the identified Millennium-Lower Westchester interconnection point to Con Edison's transmission lines, Gas Operations would install approximately 15,000 feet of 36-inch diameter steel piping, overpressure protection equipment, and a remotely operated valve. The over-pressure protection would be installed in an underground vault with the inside dimensions of approximately 13 feet long, 8 feet wide and 9 feet high. The remotely operated valve will be installed in a second, underground vault with the inside dimensions of approximately 11 feet long, 6 feet wide and 8 feet high. These vaults will be located in close proximity to the new gate station. The steel piping will be of welded construction per NYSPSC code 16 NYCRR 255. The required permits will be obtained for street opening permits and traffic stipulations.

Units per Year: 7,500 feet of 36-inch diameter steel piping per year, the overpressure protection equipment, and a remotely operated valve would be installed in the 2nd year of the project.

High-Level Schedule: All of Con Edison's construction activities are projected to take place during the 2019 and 2020 calendar years.

Justification Summary:

The Millennium-Lower Westchester Interconnect project will link Con Edison’s gas transmission system to Millennium’s new delivery point. The Millennium Project will supply the growing energy needs of the largest U.S. metropolitan area and help improve air quality. It will expand the number of pipeline connections to the Con Edison system, increasing reliability. In addition, the location selected for the interconnection between the Millennium pipeline and the Con Edison system will mitigate the risk of severe disruption that would result from the loss of an existing gate station in Westchester. The pipeline would allow Con Edison to source natural gas from a number of areas; it will provide diversity and flexibility in purchasing supplies.

Another expected benefit of the project is reduced commodity price volatility. Spot natural gas prices in the New York metropolitan area are among the highest in the nation and have spiked to very high levels during cold periods. Con Edison anticipates that the historical premium daily price for natural gas in New York, compared to the price in nearby areas, may narrow following construction of the pipeline project. Since natural gas is the fuel used by electric generators that typically sets the price of electricity in New York, we anticipate that electric customers may see a benefit in lower electricity prices. Lower prices would also benefit Con Edison's steam customers, since natural gas is the primary fuel used to generate steam.

Supplemental Information:

- Alternatives: An alternative to the project is connecting with a new Millennium interconnect at White Plains. This alternate route would have Millennium pipeline stop building at White Plains and Con Edison connect there instead. However after review of the Con Edison system, this interconnect location was deemed non-preferred because the flows would fight with those coming from the White Plains gate station.

- Risk of No Action: Without the project, the growing energy needs of the largest U.S. metropolitan area may not be met. There would be little chance of improving reliability and the risk of severe gas disruption that would result from the loss of an existing gate station would still exist. There would be no possibility of lowering the price of natural gas in the New York metropolitan area, benefitting electric, gas, and steam customers.

- Non-financial Benefits: This interconnect will facilitate the addition of interstate pipeline capacity to the Con Edison system through the creation of a new delivery point which will enhance system reliability, mitigate the loss of load to customers, and provide access to economic supply that can help meet demand growth.

- Summary of Financial Benefits (if applicable) and Costs: N/A

- Technical Evaluation/Analysis: An evaluation of this project was conducted using Synergi (Stoner) Network Analysis, both steady state and unsteady state analysis was performed. The studies clearly indicate that connecting this additional supply point would improve system reliability and would significantly reduce the possibility of a wide spread customer outage. In addition, the take away capacity at this location meets the objectives of this project.

- Project Relationships (if applicable): N/A

- Basis for Estimate: Historical cost for pipeline interconnections was used to calculate estimate.

Total Funding Level ($000):

Historical Spend

Actual 2011	**Actual 2012**	**Actual 2013**	**Actual 2014**	**Historic Year** (O&M only)	**Forecast 2015**

Historical Elements of Expense

EOE	Actual 2011	Actual 2012	Actual 2013	Actual 2014	Historic Year (O&M only)	Forecast 2015
Labor						
M&S						
A/P						
Other						
Total						

Request ($000):

Request 2015	Request 2016	Request 2017	Request 2018	Request 2019	Request 2020
				$46,374	$46,503

Request by Elements of Expense

EOE	2015	2016	2017	2018	2019	2020
Labor					1,800	1,800
M&S					2,441	2,441
A/P					27,207	27,517
Other					2,615	2,643
Overheads					12,311	12,102
Total					**46,374**	**46,503**

X	Capital
	O&M

2019 - Gas Operations

Project/Program Title	Iroquois-3rd Ward of Queens Interconnect
Project Manager	Anthony Leto
Project Number	21680799
Status of Project	Project Not Started
Estimated Start Date	January 2019
Estimated Completion Date	December 2019
Work Plan Category	Strategic

Work Description:

To connect the identified Iroquois interconnection point to Con Edison's transmission lines, Gas Operations would install approximately 5,000 feet of 30-inch diameter steel piping, overpressure protection equipment, and a remotely operated valve. The over-pressure protection would be installed in an underground vault with the inside dimensions of approximately 13 feet long, 8 feet wide and 9 feet high. The remotely operated valve will be installed in a second, underground vault with the inside dimensions of approximately 11 feet long, 6 feet wide and 8 feet high. These vaults will be located in close proximity to the new gate station. The steel piping will be of welded construction per NYSPSC code 16 NYCRR 255. The required permits will be obtained from the NYCDOT for street opening permits and traffic stipulations.

All of Con Edison's construction activities are projected to take place during the 2019 calendar year.

Justification Summary:

The Iroquois-3rd Ward of Queens Interconnect project will link Con Edison’s gas transmission system to Iroquois’ new delivery point. The Iroquois Project will supply the growing energy needs of the largest U.S. metropolitan area and help improve air quality. The Project will increase pipeline deliverability to the system needed to meet the increase in gas demand. It will expand the number of pipeline connections to the Con Edison system, increasing reliability. In addition, the location selected for the interconnection between the Iroquois pipeline and the Con Edison system will mitigate the risk of severe disruption that would result from loss of an existing section of main in the Astoria-Jackson Heights-East Elmhurst corridor. The pipeline would also allow Con Edison to source natural gas from a number of areas, providing diversity and flexibility in purchases.

Expanding the pipeline infrastructure serving New York City is consistent with the goals of the NY State Energy Plan and New York City's Plan NYC 2030 to promote cleaner burning heating fuel and reduce air pollutant emissions.

Another expected benefit of the project is reduced commodity price volatility. Spot natural gas prices in the New York metropolitan area are among the highest in the nation and have spiked to very high levels during cold periods. Con Edison anticipates that the historical premium daily price for natural gas in New York, compared to the price in nearby areas, may narrow following construction of the pipeline project. Since natural gas is the fuel used by electric generators that typically sets the price of electricity in New York, we

anticipate that electric customers may see a benefit in lower electricity prices. Lower prices would also benefit Con Edison's steam customers, since natural gas is the primary fuel used to generate steam.

Supplemental Information:

- Alternatives: An alternative to the project is connecting with a new Iroquois interconnect near the Citified Stadium. This alternate route would have Iroquois go through the waters of Flushing Bay. However after further engineering analysis, the depth of the aquatic environment in the Bay and Homeland Security concerns due to its proximity to LaGuardia International Airport deemed this route to be non-preferred.

- Risk of No Action: Without the project, the growing energy needs of the largest U.S. metropolitan area may not be met. There would be little chance of improving reliability, and the risk of severe gas disruption that would result from the loss of a section of main in West Queens would still exist. There would be limited possibility in the reduction of natural gas price volatility in the New York metropolitan area, benefitting electric, gas, and steam customers.

- Non-financial Benefits: The new interconnect will provide greater gas pressure in the 3rd Ward of Queens which has historically been the low point in the gas transmission system.

- Summary of Financial Benefits (if applicable) and Costs: N/A

- Technical Evaluation/Analysis: An evaluation of this project was conducted using Synergi (Stoner) Network Analysis, both steady state and unsteady state analysis was performed. The studies clearly indicate that connecting this additional supply point would improve system reliability and would significantly reduce the possibility of a wide spread customer outage. In addition, the take away capacity at this location meets the objectives of this project.

- Project Relationships (if applicable): N/A

- Basis for Estimate: Based on historical cost for transmission projects.

Total Funding Level ($000):

Historical Spend

Actual 2011	**Actual 2012**	**Actual 2013**	**Actual 2014**	**Historic Year** (O&M only)	**Forecast 2015**

Historical Elements of Expense

(Historical EOE breakout will only be completed for Steam projects/programs of $500 thousand or more and, for all other organizations, projects/programs of $1 million or more.)

EOE	Actual 2011	Actual 2012	Actual 2013	Actual 2014	Historic Year (O&M only)	Forecast 2015
Labor						
M&S						
A/P						
Other						
Total						

Request ($000):

Request 2016	Request 2017	Request 2018	Request 2019	Request 2020
			$15,458	

Request by Elements of Expense

EOE	2016	2017	2018	2019	2020
Labor				$600	
M&S				$813	
A/P				$9,069	
Other				$871	
Overheads				$4,105	
Total				**$15,458**	

PRESSURE CONTROL:

X	Capital
	O&M

2016 – Gas Operations/Pressure Control

Project/Program Title	PC - Water Proof Manholes
Project Manager	Len Toscano
Hyperion Project Number	21477192
Organization's Project Number	N/A
Status of Project	Planning
Estimated Start Date	January 2016
Estimated Completion Date	December 2020
Work Plan Category	Strategic- System and Component Upgrades

Work Description:

Treatment and coating of regulator station vaults to eliminate water intrusion. Approximately 10 to 15 regulator station manholes are water proofed each year under separate projects. This covers waterproofing that gets completed outside of existing regulator upgrade programs. For example, if a regulator station is being revamped or upgraded, during that time it will also get waterproofed. This program is for targeted waterproofing outside of any other existing program.

Justification Summary:

There are regulator manholes on the Con Edison system that experience water intrusion due to deteriorated manhole conditions16 NYCRR Section 255.189 requires we minimize the entrance of water. Alleviating the water intrusion will improve the safety and reliability of the station operation and reduce maintenance. This allocation covers stand-alone work, as highlighted above, some waterproofing activity is also performed in conjunction with other planned capital program work.

Supplemental Information:

- Alternatives: To minimize water intrusion in a manhole, coating can be applied or the asset could be replaced in its entirety. Due to the cost of completely replacing the asset, it is not advised.

- Risk of No Action: Unmitigated water intrusion provides an unacceptable condition for component corrosion, sometimes with certain conditions at an accelerated rate. This water intrusion can lead to equipment conflicts and improper equipment operation, premature equipment failure, as well as PSC code violations and citations

- Non-financial Benefits: 16 NYCRR Section 255.189 requires we minimize entrance of water into regulator station manholes.

- Summary of Financial Benefits (if applicable) and Costs: N/A

- Technical Evaluation/Analysis: Water intrusion into regulator station manholes corrodes equipment and damages any electrical equipment. As described above, to promote reliability and limit equipment damage waterproofing is required.

- Project Relationships (if applicable): "Unserviceable Equipment" and "Replace Regs, Valves & Strainer 2" & larger." represent similar programs supporting the safe and reliable operation of regulator stations. The scope of this program, “Water Proof Manholes”, specifically covers water intrusion. Work scopes and funding associated with this budget are integrated into the two highlighted budgets in order to allow for a single property record ruling for the appropriate inside plant accounting. This action also supports improved project management through minimized equipment outages, reduced mobilization and decreased contractor coordination requirements.

- Basis for Estimate: The annual program expenditures are consistent yearly and planned based on what is historically spent.

Total Funding Level ($000):

Historical Spend

Actual 2011	Actual 2012	Actual 2013	Actual 2014	Historic Year (O&M only)	Forecast 2015
					$100

Historical Elements of Expense

(Historical EOE breakout will only be completed for Steam projects/programs of $500 thousand or more and, for all other organizations, projects/programs of $1million or more.)

EOE	Actual 2011	Actual 2012	Actual 2013	Actual 2014	Historic Year (O&M only)	Forecast 2015
Labor						
M&S						
A/P						
Other						
Total						

Request ($000):

Request 2016	Request 2017	Request 2018	Request 2019	Request 2020
$100	$100	$100	$100	$100

Request by Elements of Expense

EOE	2016	2017	2018	2019	2020
Labor	$23	$23	$23	$23	$23
M&S	$17	$17	$17	$17	$17
A/P	$38	$40	$40	$43	$44
Other	$6	$5	$5	$5	$5
Overheads	$16	$15	$15	$12	$11
Total	**$100**	**$100**	**$100**	**$100**	**$100**

X	Capital
	O&M

2016 – Gas Operations/Pressure Control

Project/Program Title	PC - Replace Regulators, Valves & Strainer 2 and Larger
Project Manager	Len Toscano
Hyperion Project Number	21477211
Organization's Project Number	N/A
Status of Project	Ongoing Program
Estimated Start Date	Ongoing
Estimated Completion Date	Ongoing
Work Plan Category	Strategic- System and Component Upgrades

Work Description:

Replacement of valves, regulators, and/or strainers of sizes 2 inch and larger at regulator stations. Work scopes are primarily associated with select component replacement mostly due to corrosion or if repair is deemed not to be cost effective. Replacement of these components is determined when equipment failures is experienced, or during inspections. Between eight and ten regulator manholes experience replacement activity under this program each year.

Justification Summary:

This is an ongoing annual capital program. Regulator stations are important links in the overall reliability of our gas distribution system and require replacement in order to ensure a safe and reliable operating system and to meet 16 NYCRR Section 255.739. In 2004, the company revised its property record classification for partial equipment replacements within regulator manholes, and the replacement of equipment 2" and larger is now classified and practiced as a capital activity. This program funds these occurrences, supports aged, and equipment identified for replacement / upgrade to be completed in conjunction with proper capital accounting.

Supplemental Information:

- Alternatives: To be compliant with 16 NYCRR Section 255.739, this work must be completed. As equipment is identified for replacement, replacement components are ordered and work packages developed. The sites are then scheduled for select equipment replacement as seasonal and system demands permit.

- Risk of No Action: The equipment identified for replacement is usually beyond a minor repair. The required replacement must be conducted in order to comply with specification and PSC code. The alternative activity of executing the required component replacement under maintenance accounts would drive up O&M charges for the department, and expect to exceed the department's annual O&M funding.

- Non-financial Benefits: This program is required to be compliant with 16 NYCRR Section 255.739, ensuring a safe and reliable operating system.

- Summary of Financial Benefits (if applicable) and Costs: N/A

- Technical Evaluation/Analysis: See work description and justification summary. Due to corrosion and aging equipment, equipment replacement is required to support a reliable system.

- Project Relationships (if applicable): "Unserviceable Equipment" and "Waterproof Manholes" represent similar programs supporting the safe and reliable operation of regulator stations. The scope of this program specifically covers regulator valves and strainers that are 2 inch and larger. Work scopes and funding associated with this budget are integrated into the two highlighted budgets in order to allow for a single property record ruling for the appropriate inside plant accounting. This action also supports improved project management through minimized equipment outages, reduced mobilization and decreased contractor coordination requirements.

- Basis for Estimate: The estimates for this program are based on a level that we have historically required.

Total Funding Level ($000):

Historical Spend

Actual 2011	Actual 2012	Actual 2013	Actual 2014	Historic Year (O&M only)	Forecast 2015
	$95				$500

Historical Elements of Expense

Request ($000):

Request 2016	Request 2017	Request 2018	Request 2019	Request 2020
$500	$500	$500	$500	$500

Request by Elements of Expense

EOE	2016	2017	2018	2019	2020
Labor	$150	$150	$150	$150	$150
M&S	$98	$98	$98	$98	$98
A/P	$128	$136	$143	$155	$162
Other	$19	$20	$21	$22	$22
Overheads	$105	$96	$88	$75	$68
Total	**$500**	**$500**	**$500**	**$500**	**$500**

X	Capital
	O&M

2016 – Gas Operations

Project/Program Title	PC - Unserviceable Equipment
Project Manager	Len Toscano
Hyperion Project Number	21477218
Organization's Project Number	N/A
Status of Project	Ongoing Program
Estimated Start Date	Ongoing
Estimated Completion Date	Ongoing
Work Plan Category	Strategic- System and Component Upgrades

Work Description:

Complete replacement of piping, regulators, regulator components, strainers and valves at existing stations where the equipment is corroded beyond repair, where designs are obsolete or equipment upsizing is required. Between 10 and 15 regulator stations have unserviceable equipment that gets replaced each year. Equipment is identified for replacement during regular inspections, or when equipment fails.

Justification Summary:

This is an ongoing annual capital program. Regulator stations that fall within this program are important links in the overall reliability of our gas distribution system and must be upgraded in order to ensure a safe and reliable operating system and to meet 16 NYCRR Section 255.739. Activities that fall under this budget line item involve major equipment change outs within the regulator manhole. This could be required because the components are obsolete, they no longer fulfill the demands on the regulator station and require upsizing, or the equipment is no longer able to be serviced and maintained because of water infiltration over time and requires major overhauls to be in compliance with code and specification compliance. If the equipment is allowed to fail, particularly on the coldest days of the year, service to customers could be at risk.

Supplemental Information:

- Alternatives: This replacement program is required, there are no alternatives. Without replacement reliability and service to customers is at risk. As equipment and station piping is identified for replacement, pressure-regulating equipment components are ordered, and work packages developed. The sites are then scheduled for equipment replacement as seasonal and system demands permit.

- Risk of No Action: The equipment identified for replacement and work scope under this budget line is beyond just a single component replacement. The required replacements must be completed in order to comply with specification and PSC code. Additionally, the alternative activity of executing the required component replacement under maintenance accounts would drive up O&M charges for the department, and expect to exceed the department's annual O&M funding.

- Non-financial Benefits: This program is required to be compliant with 16 NYCRR Section 255.739, ensuring a safe and reliable operating system.

- Summary of Financial Benefits (if applicable) and Costs: N/A

- Technical Evaluation/Analysis: See work description and justification summary. Due to corrosion and aging equipment, equipment replacement is required to support a reliable system.

- Project Relationships (if applicable): "Replace Regs, Valves & Strainer 2" & larger" and "Waterproof Manholes" represent similar programs supporting the safe and reliable operation of regulator stations. The scope of this program specifically covers replacement of unserviceable equipment within a regulator station. Work scopes and funding associated with this budget are integrated into the two highlighted budgets in order to allow for a single property record ruling for the appropriate inside plant accounting. This action also supports improved project management through minimized equipment outages, reduced mobilization and decreased contractor coordination requirements.

- Basis for Estimate: The estimates for this program are based on a level that we have historically required. Each year the specific regulator stations requiring replacement of unserviceable equipment are assessed and replaced as needed.

Total Funding Level ($000):

Historical Spend

Actual 2011	Actual 2012	Actual 2013	Actual 2014	Historic Year (O&M only)	Forecast 2015
	$98	$6			$500

Request ($000):

Request 2016	Request 2017	Request 2018	Request 2019	Request 2020
$500	$500	$500	$500	$500

Request by Elements of Expense

EOE	2016	2017	2018	2019	2020
Labor	$150	$150	$150	$150	$150
M&S	$97	$98	$98	$98	$98
A/P	$128	$135	$143	$156	$162
Other	$19	$20	$21	$22	$22
Overheads	$106	$97	$88	$74	$68
Total	**$500**	**$500**	**$500**	**$500**	**$500**

X	Capital
	O&M

2016 – Gas Operations

Project/Program Title	PC - Regulator Vent System Refurbishment
Project Manager	Len Toscano
Project Number	21477227
Organization's Project Number	N/A
Status of Project	Ongoing Program
Estimated Start Date	Ongoing
Estimated Completion Date	Ongoing
Work Plan Category	Strategic- System and Component Upgrades

Work Description:

Regulator station vent systems are refurbished under this program based on need. Stations are identified during inspections or if equipment failure takes place. Corrosion, water infiltration could lead to equipment failure. Installation of a CIP (cured in place) lining system in the 2 inch regulator vent line and two 4 or 6 inch foul and fresh air vent lines at various regulator station vaults where lining is a preferred solution. If conditions exist where the lining system is unable to be dispatched, the vent system will be replaced via direct burial. Between eight and ten vent systems are replaced each year under this program.

Justification Summary:

This is an ongoing annual capital program. Regulator vent systems are required to both vent the regulator manhole of potential gas accumulation, and to vent the regulator pilot and diaphragms. During mandated periodic inspections, some of the existing vent lines are identified as being either obstructed or corroded. If corroded, it can allow water to enter the pilot or regulator possibly resulting in equipment failure. Without proper atmospheric registration the pilot regulators cannot operate as designed, and the pressure regulating station could create an overpressure condition possibly impacting very large segments of the distribution grid. The condition of the equipment affects system reliability and safety. The applicable Sections of 16 NYCRR are 255.187, 255.189, and 255.619 through 255.623.

Supplemental Information:

- Alternatives: No viable alternatives.

- Risk of No Action: The buried vent systems identified for replacement and work scope under this budget line involve more than a single component replacement. The required vent system replacement or upgrade must be conducted in order to comply with company specification and PSC code requirements. The alternative activity of executing the required repairs under maintenance accounts would drive up O&M charges for the department, and expect to exceed the department's annual O&M budgets and funding.

- Non-financial Benefits: This program is required to be compliant with 16 NYCRR Sections 255.187, 255.189, and 255.619 through 255.623.

- Summary of Financial Benefits (if applicable) and Costs: N/A

- Technical Evaluation/Analysis: See work description and justification summary. Due to corrosion, water infiltration, and aging equipment, equipment replacement is required to support a reliable system.

- Project Relationships (if applicable): Other programs under Pressure Control also support the safe and reliable operation of regulator stations. The scope of this program specifically covers regulator vent refurbishments. Work scopes and funding associated with this budget are integrated into the two highlighted budgets in order to allow for a single property record ruling for the appropriate inside plant accounting. This action also supports improved project management through minimized equipment outages, reduced mobilization and decreased contractor coordination requirements.

- Basis for Estimate: Refurbishments typically cost around $30,000 each, plus overheads.

Total Funding Level ($000):

Historical Spend

Actual 2011	Actual 2012	Actual 2013	Actual 2014	Historic Year (O&M only)	Forecast 2015
	724	494	622		$400

Request ($000):

Request 2016	Request 2017	Request 2018	Request 2019	Request 2020
$340	$455	$463	$462	$463

Request by Elements of Expense

EOE	2015	2016	2017	2018	2019	2020
Labor	$128	$123	$163	$163	$164	$164
M&S	$55	$54	$73	$73	$73	$73
A/P	$30	$34	$46	$51	$61	$69
Other	$7	$7	$10	$10	$11	$12
Overheads	$131	$122	$163	$166	$153	$145
Total	**$351**	**$340**	**$455**	**$463**	**$462**	**$463**

X	Capital
	O&M

2016– Gas Operations

Project/Program Title	PC - Uncoated Piping
Project Manager	Len Toscano
Hyperion Project Number	21477237
Organization's Project Number	N/A
Status of Project	Ongoing Program
Estimated Start Date	January 2016
Estimated Completion Date	December 2020
Work Plan Category	Strategic- System and Component Upgrades

Work Description:

Replace corroded steel buried piping outside of regulator vaults (considered inside plant) when leaks are discovered, or severe corrosion is identified. This uncoated piping is the buried pipe located between two stages of a regulator station and located between two different manholes. This piping is often referred to as inter-stage piping. Under this program, usually one or two regulator stations have uncoated piping replaced per year.

Justification Summary:

This program covers the replacement of leaking, unprotected and corroded buried steel piping located outside regulator station vaults. The condition of the equipment affects system reliability and safety. Leaking pipe can prove hazardous to the public and property. They can also cause closure of a critical regulator station during peak load times, affecting system pressures and reliability. Applicable sections from 16 NYCRR are 255.619 through 255.623.

Supplemental Information:

- Alternatives: The only alternative would be to wait for the piping to completely fail before replacement. This would risk reliability and safety. Therefore, it is not advised.

- Risk of No Action: A gas leak condition that worsens to the point of impacting station performance, regulator station reliability and possible regulatory code violations.

- Non-financial Benefits: The condition of the equipment affects system reliability and safety. The piping can cause closure of a critical regulator station during peak load times, affecting system pressures and reliability.

- Summary of Financial Benefits (if applicable) and Costs: N/A

- Technical Evaluation/Analysis: See descriptions above. Replacements under this program are completed as needed for reliability and safety.

- Project Relationships (if applicable): "Corroded Gauge Lines", "Unserviceable Equipment", Waterproof Manholes", and "Replace Regulator Valves and Strainer 2 and Larger" are all

programs that support the safe and reliable operation of regulator stations. The scope of this program specifically covers replacement of uncoated piping between regulator stations. Work scopes and funding associated with this budget are integrated into the two highlighted budgets in order to allow for a single property record ruling for the appropriate inside plant accounting. This action also supports improved project management through minimized equipment outages, reduced mobilization and decreased contractor coordination requirements.

- Basis for Estimate: Event and location driven. Cost per foot for construction will be a big driver. Overall costs associated with this budget line item is directly connected to site logistics, facility location, depth of cover, existing roadway materials, etc. Each of these components directly impacts the project's cost, thus affecting the overall budget expense for a facility replacement.

Total Funding Level ($000):

Historical Spend

Actual 2011	Actual 2012	Actual 2013	Actual 2014	Historic Year (O&M only)	Forecast 2015
					$50

Request ($000):

Request 2016	Request 2017	Request 2018	Request 2019	Request 2020
$50	$202	$205	$205	$103

Request by Elements of Expense

EOE	2016	2017	2018	2019	2020
Labor	$12	$68	$67	$68	$34
M&S	$11	$38	$38	$38	$18
A/P	$11	$21	$24	$28	$16
Other	$2	$5	$5	$6	$3
Overheads	$14	$70	$71	$66	$32
Total	**$50**	**$202**	**$205**	**$205**	**$103**

X	Capital
	O&M

2016 – Gas Operations/Pressure Control

Project/Program Title	PC - Corroded Gauge Lines
Project Manager	Len Toscano
Hyperion Project Number	21477231
Organization's Project Number	N/A
Status of Project	Ongoing
Estimated Start Date	Ongoing
Estimated Completion Date	Ongoing
Work Plan Category	Strategic- System and Component Upgrades

Work Description:

The purpose of this project is to replace corroded steel gauge lines between regulator vaults and gauge posts at regulator stations.

Justification Summary:

This program covers the replacement of leaking, unprotected and corroded buried steel gauge lines which are located between regulator vaults and gauge posts at regulator stations. The condition of the equipment affects system reliability and safety. Leaking pipe can prove hazardous to the public and property. They can also cause regulators to open or close inappropriately due to incorrect pressure sensing, which may be in violation of 16 NYCRR Sections 255.619 or 255.623.

Supplemental Information:

- Alternatives: The leak repair activity must be conducted. Property accounting allows for full line replacement under capital, or partial replacement or spot repairs under maintenance. If the repair activity is conducted by partial pipe segment replacement or clamp installation, the repair charges are then directed toward maintenance accounts. This alternative activity of executing the required repairs under maintenance accounts then may increase O&M charges for the department, and possibly contribute to exceeding the department's annual O&M budgets and funding.

- Risk of No Action: A gas leak condition that worsens to the point of impacting station performance, regulator station reliability and possible regulatory code violations.

- Non-financial Benefits: Replacement of corroded gauge lines increases reliability on regulator stations ensuring they are equipped to operate properly on the coldest days of the year. This program also allows for compliance with 16 NYCRR PSC Parts Sections 255.619 or 255.623

- Summary of Financial Benefits (if applicable) and Costs: N/A

- Technical Evaluation/Analysis: See earlier sections.

- Project Relationships (if applicable): N/A

- Basis for Estimate: Overall costs associated with this budget line item is directly connected to site logistics, facility location, depth of cover, existing roadway materials, etc. Each of these components directly impacts the project's cost, thus affect the overall budget expense for a facility replacement.

Total Funding Level ($000):

Historical Spend

Actual 2011	Actual 2012	Actual 2013	Actual 2014	Historic Year (O&M only)	Forecast 2015
					$50

Historical Elements of Expense

(Historical EOE breakout will only be completed for Steam projects/programs of $500 thousand or more and, for all other organizations, projects/programs of $1million or more.)

EOE	Actual 2011	Actual 2012	Actual 2013	Actual 2014	Historic Year (O&M only)	Forecast 2015
Labor						$12
M&S						$11
A/P						$11
Other						$2
Overheads						$14
Total						**$50**

Request ($000):

Request 2016	Request 2017	Request 2018	Request 2019	Request 2020
$50	$101	$102	$102	$51

Request by Elements of Expense

EOE	2016	2017	2018	2019	2020
Labor	$12	$36	$36	$36	$18
M&S	$11	$19	$19	$22	$11
A/P	$11	$8	$9	$9	$5
Other	$2	$2	$2	$3	$1
Overheads	$14	$36	$36	$32	$16
Total	**$50**	**$101**	**$102**	**$102**	**$51**

X	Capital
	O&M

2016 – Gas Operations/Pressure Control

Project/Program Title	PC - Pressure Monitoring / Telemetrics
Project Manager	Len Toscano
Hyperion Project Number	21477242
Organization's Project Number	N/A
Status of Project	Ongoing Program
Estimated Start Date	Ongoing
Estimated Completion Date	Ongoing
Work Plan Category	Strategic- System and Component Upgrades

Work Description:
As the gas system expands, we are increasing the number of monitoring devices. Monitoring devices are placed in strategic locations designated by Gas Engineering to monitor gas pressures. This program replaces existing pressure monitoring devices or installs devices at new locations. This may include installation of electronic pressure monitoring instrumentation, electric power supply, and communication equipment for real time remote monitoring of pressure readings and equipment. Between seven and ten locations are installed or replaced each year.

Justification Summary:

This program covers the installation of electronic pressure monitoring instrumentation, electric power supply, and communications equipment for real time remote monitoring of pressure readings and equipment operation. In addition, we are expecting to migrate to electronic pressure monitoring to replace traditional paper charts at each remote site. This new instrumentation is expected to allow for other communication points, which can then provide valuable information as well as security information. This equipment is expected to assist toward enhanced system reliability, asset management safety and system security. PSC code mandates that regulator stations be periodically inspected. The installation of these devices help limit the manual and time-consuming efforts required of paper charts. The monitoring devices also allow for real-time monitoring of system pressures.

Supplemental Information:

- Alternatives: Maintain paper charts and perform periodic site visits. PSC code mandates that pressure regulator stations be periodically inspected on a monthly cycle. The integration of more robust electronic monitoring platforms are expected to mitigate these needs once real time data collection systems overcome time stamp, historian archive and site power management issues. These data storage issues are currently being addressed in conjunction with the ongoing SCADA upgrade project.

- Risk of No Action: Continue with physical monthly inspections, paper chart archiving and historical records and data management. This does not support advanced real time monitoring of the distribution system. Possible delayed response to outages, incidents or damages by limited real time system monitoring

- Non-financial Benefits: This program supports compliance with PSC code ensuring a safe and reliable operating system. The real-time monitoring also has the added benefit of responding to system changes and customer outages quicker.

- Summary of Financial Benefits (if applicable) and Costs: N/A

- Technical Evaluation/Analysis: Initial limited trials of electronic pressure recording equipment (EPRs) have been dispatched and under evaluation. Next steps include improving and mastering power management with field electronics, and historical data management at the SCADA host end - GOSS / Gas Control.

- Project Relationships (if applicable): GTI is currently working with Con Ed's Pressure Control & R&D organization to test and identify more robust power supplies, such as thermal generators. Site testing has been underway since 2008 with some thermal generating equipment. Engineering and design installation standards projects are underway with GTI. In addition, Gas Operations is currently upgrading its SCADA system that is expected to sponsor more robust historical data storage, management and reporting.

- Basis for Estimate: Based on the best information available at this time, this program anticipates between seven and ten regulator stations receive upgraded pressure monitoring equipment starting in 2017.

Total Funding Level ($000):

Historical Spend

Actual 2011	Actual 2012	Actual 2013	Actual 2014	Historic Year (O&M only)	Forecast 2015
		$298	$49		$90

Historical Elements of Expense

EOE	Actual 2010	Actual 2011	Actual 2012	Historic Year (O&M only)	Actual 2013	Actual 2014
Labor						
M&S						
A/P						
Other						
Total						

Request ($000):

Request 2016	Request 2017	Request 2018	Request 2019	Request 2020
$90	$500	$500	$500	$400

Request by Elements of Expense:

EOE	2015	2016	2017	2018	2019	2020
Labor	$21	$21	$141	$141	$141	$118
M&S	$15	$15	$37	$37	$37	$30
A/P	$25	$35	$210	$216	$228	$179
Other	$3	$4	$22	$22	$23	$18
Overheads	$26	$15	$90	$84	$71	$55
Total	**$90**	**$90**	**$500**	**$500**	**$500**	**$400**

X	Capital
	O&M

2016 – Gas Operations

Project/Program Title	PC – Gridboss / Automated Adaptive Controls
Project Manager	Len Toscano
Hyperion Project Number	21477244
Organization's Project Number	N/A
Status of Project	Ongoing Program
Estimated Start Date	Ongoing
Estimated Completion Date	Ongoing
Work Plan Category	Strategic- System and Component Upgrades

Work Description:

The Gridboss automated controls for regulator stations are no longer supported by the vendor. This program looks at retrofitting existing platforms to serve as a replacement to improve the efficiency of system pressure regulation. It also looks at identifying other possible replacement options. This involves installation at three to four regulator stations per year.

Units per Year: A distribution region / system usually involving three to four regulator stations.
Estimated cost to upgrade each regulator station is approximately $90,000
Mandatory: Directly related to system performance and new system loads

Justification Summary:

This program covers the installation of automated or adaptive control equipment, which uses real time system data to adjust regulator station pressures and output. This automated adaptive (or "smart") equipment minimizes the need to dispatch mechanics for pressure adjustments during system changes since changes occur automatically. Because pressures continually change to meet demand, systems are operated at lower pressures, aiding in leak reduction. This equipment will help to maintain system reliability and safety.

Supplemental Information:

- Alternatives: Continued manual station adjustments, which increases O&M charges and manpower demands.
- Risk of No Action: Continued manual station adjustments, which increases O&M charges and manpower demands
- Non-financial Benefits: Replacement of these controls promotes a safe and reliable operating system by using real time system data to adjust regulator station pressures and output.
- Summary of Financial Benefits (if applicable) and Costs: N/A

- Technical Evaluation/Analysis: Gas Distribution Engineering identifies possible sites for potential dispatch using annual system modeling updates and reviews. This then sponsors a detailed field review of possible sites for equipment dispatch to confirm adequate communications and infrastructure are available to support the automated system needs and operating platform.

- Project Relationships (if applicable): N/A

- Basis for Estimate: About $80,000 each for hardware, plus labor and overheads.

Total Funding Level ($000):

Historical Spend

Actual 2011	Actual 2012	Actual 2013	Actual 2014	Historic Year (O&M only)	Forecast 2015
					$100

Historical Elements of Expense
(Historical EOE breakout will only be completed for Steam projects/programs of $500 thousand or more and, for all other organizations, projects/programs of $1 million or more.)

EOE	Actual 2011	Actual 2012	Actual 2013	Actual 2014	Historic Year (O&M only)	Forecast 2015
Labor						
M&S						
A/P						
Other						
Total						

Request ($000):

Request 2016	Request 2017	Request 2018	Request 2019	Request 2020
$85	$650	$650	$650	$500

Request by Elements of Expense

EOE	2015	2016	2017	2018	2019	2020
Labor	$20	$21	$181	$181	$181	$140
M&S	$14	$15	$81	$81	$81	$70
A/P	$36	$30	$243	$251	$266	$202
Other	$3	$4	$28	$28	$30	$24
Overheads	$27	$15	$117	$109	$92	$64
Total	**$100**	**$85**	**$650**	**$650**	**$650**	**$500**

3. SECURITY

X	Capital
	O&M

2016 – Gas Operations

Project/Program Title	Tier 2 Security Improvements
Project Manager	Jack Ng
Hyperion Project Number	MGD9804
Organization's Project Number	N/A
Status of Project	Planning
Estimated Start Date	January 1st 2017
Estimated Completion Date	December2020
Work Plan Category	Strategic System and Component Upgrades

Work Description:

The Con Edison's Executive Security Committee identified certain Company owned facilities as Tier 2 facilities. The Tier 2 gas facilities consist mainly of gas gate/metering stations that connect the Con Edison Gas System to the interstate pipeline companies, certain tunnel facilities that contain critical utility infrastructure, as well as the backup gas control center.

This project is for the installation and/or upgrade of physical security components at various critical Tier 2 gas facilities in order to secure and mitigate threats to the facilities. Mitigations will be designed to deter, delay, detect, assess and respond to potential threats. These physical security measures may include Closed Circuit Cameras providing live feed of the sites, Digital Video Recording of the live feeds, lighting to provide 24/7 camera coverage, intrusion detection, continuous physical perimeter barrier, electronic access control, and/or security signage.

Justification Summary:

Con Edison's gas system is a crucial utility infrastructure that distributes natural gas to 1.1 million customers in Manhattan, the Bronx, Queens and Westchester County. Con Edison's Executive Security Committee has preliminarily identified nine gas facilities as Tier 2 gas facilities.
Working in conjunction with Corporate Security, vulnerability assessments have been performed at these critical gas facilities. The gaps identified will be addressed under this Tier 2 Security Improvement program.

Supplemental Information:

- Alternatives: The existing physical security equipment at these critical gas facilities are either non-existent or do not provide a minimal security threshold set forth by the Executive Security Committee.

- Risk of No Action: Elevated risk of threats to critical gas facilities is a concern and can lead to loss of gas supply to customers and/or property damage if no action is taken.

- Non-financial Benefits: Continued safe and secure operation of the Company's gas system.

- Summary of Financial Benefits (if applicable) and Costs: N/A

- Technical Evaluation/Analysis: Corporate Security has reviewed the Tier 2 gas locations and had Security Subject Matter Experts performed physical security vulnerability site assessments for each of the locations. From these physical security vulnerability assessments, Corporate Security has made recommendations for upgrades at these locations.

- Project Relationships (if applicable): The Tier 1 and the tunnel security are security programs as well. This Tier 2 program is a lower priority security program. They are different programs in that sense.

- Basis for Estimate: Corporate Security is currently working to provide cost estimates for the installation and/or upgrade of the physical security measures. Based on previous estimates that Corporate Security has provided for upgrades and installation of physical security measures at other facilities, the funding level provided is an estimate of the expenditure under this program.

Total Funding Level ($000):

Historical Spend

Actual 2011	Actual 2012	Actual 2013	Actual 2014	Historic Year (O&M only)	Forecast 2015

Historical Elements of Expense

EOE	Actual 2011	Actual 2012	Actual 2013	Actual 2014	Historic Year (O&M only)	Forecast 2015
Labor						
M&S						
A/P						
Other						
Total						

Request ($000):

Budget 2015	Request 2016	Request 2017	Request 2018	Request 2019	Request 2020
	$0	$1,011	$1,031	$1,030	$1,033

Request by Elements of Expense

EOE	2015	2016	2017	2018	2019	2020
Labor			$80	$40	$40	$40
M&S			$152	$152	$152	$152
A/P			$445	$500	$507	$514
Other			$52	$57	$57	$58
Overheads			$282	$282	$274	$269
Total			**$1,011**	**$1,031**	**$1,030**	**$1,033**

X	Capital
	O&M

2016-2020 – Gas Operations / Tunnel Maintenance

Project/Program Title	Various Tunnel Properties - Security Improvements
Project Manager	Victor Billinghurst
Hyperion Project Number	20956944
Organization's Project Number	N/A
Status of Project	Planning
Estimated Start Date	2019
Estimated Completion Date	2019
Work Plan Category	Strategic - System and Component Upgrades

Work Description:

Work will address vulnerabilities at Astoria, Ravenswood, Hudson Avenue, 11th Street and 1st Avenue head houses based on security assessments conducted by Corporate Security.

- The scope of work for Astoria includes increased security camera coverage, enhanced lighting to support the security cameras, and intrusion alarms connected to the Security Operations Center (SOC).

- The scope of work for Ravenswood includes increased security camera coverage, enhanced lighting to support the security cameras, and intrusion alarms connected to the SOC.

- The scope of work for Hudson Avenue includes increased security camera coverage, enhanced lighting to support the security cameras, and intrusion alarms connected to the SOC.

- The scope of work for 1st Avenue covers three cameras inside the tunnel that are outdated and non-functional. Work will include installation of cameras directed at the inside of the two hatches along with an intrusion alarm connected to the SOC.

- The scope of work for 11th Street includes CCTV to provide remote monitoring by the SOC of this unmanned site, intrusion alarms connected to the SOC, and installation of high visibility motion sensor lighting surrounding the head houses, hatchways and perimeter fence line. The perimeter fence at both head house locations will also be upgraded to an anti-cut / anti-climb fabric to reinforce the physical security of these sites.

Justification Summary:

The tunnels are critical facilities that contain various commodities including electric, steam, and natural gas, as well as telecommunication and cable lines. The loss of a tunnel would have a significant impact on energy distribution and therefore this work is required to ensure that the facilities are monitored and secure.

Corporate Security periodically performs Site Vulnerability Assessments of the Tunnel head houses and grounds. The purpose of these assessments is to identify likely intentional threats to facilities, vulnerabilities, and recommend corrective actions. These assessments focus on physical and electronic

security through actions, policies and equipment. They are also designed to address criminal threats including theft, intruders, vandalism and sabotage.

Supplemental Information:

- Alternatives: The scopes listed above meet the minimum company standards for physical security. Without these improvements we would not be meeting the security minimums laid out in corporate policy and critical company facilities would be at risk. The alternative would to do less or none at all, however, this is not recommended in order to meet the minimum security requirements.

- Risk of No Action: Taking no action increases the risk of criminal threats including theft, intruders, vandalism and sabotage.

- Non-financial Benefits: Completing this work will lead to more secure facilities, increased safety and improved reliability.

- Summary of Financial Benefits (if applicable) and Costs: The estimated cost to complete the above-referenced scope of work is $310,000.

- Technical Evaluation/Analysis: The assessments were completed by Corporate Security. The action taken with these projects is based on the facility's classification as a Tier 1 or Tier 2 facility. Tier 1 is the highest classification defined as a Company owned facility vital to sustaining energy production, delivery or business viability and the loss of which would have a significant impact to the Company and/or the community. Vulnerability assessments identify likely intentional threats to Company facilities, identifies the vulnerabilities that enable the threat, and recommend mitigations to reduce risk. As a result of these assessments, the projects described above allow us to meet the minimum criteria for the facility classification.

- Project Relationships (if applicable): N/A

- Basis for Estimate: Estimates are based on information provided by Corporate Security.

Total Funding Level ($000):

Historical Spend

Actual 2011	Actual 2012	Actual 2013	Actual 2014	Historic Year (O&M only)	Forecast 2015

Historical Elements of Expense

(Historical EOE breakout will only be completed for Steam projects/programs of $500 thousand or more and, for all other organizations, projects/programs of $1million or more.)

EOE	**Actual 2011**	**Actual 2012**	**Actual 2013**	**Actual 2014**	**Historic Year** (O&M only)	**Forecast 2015**
Labor						
M&S						
A/P						
Other						
Total						

Request ($000):

Budget 2015	**Request 2016**	**Request 2017**	**Request 2018**	**Request 2019**	**Request 2020**
$416				$310	

Request by Elements of Expense

EOE	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**
Labor	$40				$25	
M&S	$85				$65	
A/P	$227				$183	
Other	$28				$22	
Overheads	$36				$15	
Total	**$416**				**$310**	

4. GROWTH RELATED PROGRAMS AND PROJECTS

X	Capital
	O&M

2016 – Gas Operations

Project/Program Title	OTG - #4/6 Conversions NYC
Project Manager	Christine Cummings
Hyperion Project Number	1GD0201, 1GD0961, 1GD1651
Organization's Project Number	N/A
Status of Project	Ongoing Program
Estimated Start Date	Ongoing
Estimated Completion Date	Ongoing
Work Plan Category	Regulatory Mandated

Work Description:

Install new gas mains and/or services to provide new or additional gas load to customers who choose natural gas when complying with the New York City "Clean Heat" regulations. The conversions are to be completed in accordance with Con Edison's gas tariff and more specifically, the program referred to as the company's Area Growth Program and the related section of the tariff specifically addressing this initiative.

Justification Summary:

In 2016, we plan to install approximately 517 new services and 32,000 feet of new main that is necessary to provide additional load to the existing gas service customers due to New York City's "Clean Heat" regulations. The increased load profile of the buildings affected by the regulation often require main reinforcement and/or main extension in order to provide these customers with adequate service.

Many of these customers will receive service under the multi-year infrastructure build-out, called Area Growth, in geographic areas and sub-areas. (Sub-areas are called phases). The plan supports infrastructure build-out to capture approximately 65 percent of the total available #4 and #6 loads in our service territory by 2019. Each phase has a comprehensive schedule that includes marketing to customers in the zones, engineering, case management, and construction. Our Area Growth plan is designed to maintain flexibility to respond to unexpected events – including seeing more or less demand than we expect The Company requires customer commitments to be made prior to the capital construction being performed. Our approach can be simply described as:

- Plan for 65 percent of potential #4 and #6 load
- Build to actual commitments of #2, #4, and #6 load

In 2016, there are 16 zones planned (see Table 1 below), along with four regulators which are scheduled to be installed next year. We are anticipating adding 397 customers across the Area Growth zones.

We also anticipate an additional 120 services to be installed outside of the Area Growth Zones throughout the New York City portion of our gas service territory. We anticipate these other services will cost $6.6 million.

Table 1 - Phase Building Out for 2016

Borough	2015 Phase	# of Customers	Feet of Main	Services Costs ($000)	Main Cost ($000)	Total Cost ($000)	Estimated Revenue ($000)
Manhattan	I5	29	1,750	$1,425	$2,450	$3,875	$1,342
Manhattan	H2	24	150	$1,200	$210	$1,410	$1,130
Manhattan	G3	26	1,330	$1,300	$1,891	$3,191	$1,224
Manhattan	D2	20	115	$1,000	$161	$1,161	$942
Manhattan	D7	12	0	$575	$0	$575	$541
Manhattan	C4	22	485	$1,080	$873	$1,953	$1,017
Manhattan	B6	25	5,280	$1,240	$10,560	$11,800	$1,168
Manhattan	A6	25	2,400	$1,230	$4,800	$6,030	$1,158
Manhattan	A3	25	1,340	$1,245	$1,888	$3,133	$1,172
Manhattan	AA2	23	25	$1,140	$45	$1,185	$1,073
Bronx	G2	24	520	$590	$260	$850	$747
Bronx	K1	36	2,690	$900	$1,885	$2,785	$1,139
Bronx	N2	23	3,250	$575	$3,260	$3,835	$728
Bronx	Q	10	380	$250	$304	$554	$316
Bronx	C1	34	1,455	$860	$929	$1,789	$1,088
Bronx	D3	42	4,380	$1,043	$4,424	$5,467	$1,319
Area Growth Sub Total	**16**	**397**	**25,550**	**$15,653**	**$33,940**	**$49,593**	**$16,105**
"Walk-in" Customers	n/a	120	6,050	$2,666	$3,909	$6,575	$1,904
Grand Total		**517**	**31,600**	**$18,318**	**$37,849**	**$56,167**	**$18,009**

2017-2020:

The Area Growth program will continue through 2019, at which time all oil burning buildings will have had the opportunity to convert from oil to natural gas in NYC at the lowest cost available to them. We anticipate that by 2019, over 65 percent of the roughly 7,000 buildings that were identified in 2011 as using #4/6 fuel oils will have converted to natural gas. The infrastructure build out for these years will include 31 Area Growth zones, over 27,000 additional feet of main, 12 regulator stations, 8,400 feet of supply main, and almost 1,000 customers. New York City regulation eliminates #4 fuel oil boiler operation permits by 2030.

Table 2 - Phase Build Out for 2017-2020

Year	# of Area Growth Zones	Customer Connections	Main Footage	Service Cost ($000)	Main Cost ($000)	Total Capex ($000)	Regulators	Supply Main Footage
2017	11	468	8,890	$22,449	$14,039	$36,487	11	468
2018	11	230	6,437	$12,810	$12,440	$25,250	11	230
2019	9	215	7,974	$11,399	$12,283	$23,682	9	215
2020	0	82	4,372	$4,395	$6,935	$11,330	0	82
Total	31	995	27,673	$51,053	$45,696	$96,749	31	995

Supplemental Information:

- Alternatives: There are no alternatives. It is Con Edison's responsibility to furnish, place, and construct at our expense up to a total of 100 feet of gas main extension and/or service line per metered dwelling unit. Con Edison's tariff details the terms of the Area Growth Program compliance.

- Risk of No Action: We will be in violation of the tariff and we would not support the Clean Heat Initiative. In addition, the company will be subject to negative revenue adjustments under the current Gas Rate Plan for failing to meet certain targets.

- Non-financial Benefits: The addition of new gas customers or customers who are using oil and convert to natural gas for heating purposes has a direct impact on our sustainability strategy to continue to reduce methane emissions and to pursue additional oil-to-gas conversions. This program will provide additional customer satisfaction and have a positive environmental impact in support of OneNYC (formerly PlaNYC).

- Summary of Financial Benefits (if applicable) and Costs: Natural gas represents a cleaner burning heating fuel than #4 and #6 oil, and currently provides significant savings in the commodity cost to the customer directly. As shown in the summary tables above, oil to gas conversions also provide a financial benefit to the company in the form of pure base revenue. In 2016, the revenues are estimated at $18 million.

- Technical Evaluation/Analysis: See Justification Summary section for technical evaluation and analysis.

- Project Relationships (if applicable): This budget allocation applies to the recent regulation affecting #4/#6 oil-to-gas conversions and does not include traditional new business or #2 conversions. OTG #4/#6 regulator budget is closely associated with this budget as it supports the additional capacity needed in our Area Growth Zones.

- Basis for Estimate: The estimate is based on scheduled Area Growth zones, a plan to convert 65% by 2019, and historical rates of customers outside of Area Growth.

Total Funding Level ($000):

Historical Spend

Actual 2011	Actual 2012	Actual 2013	Actual 2014	Historic Year (O&M only)	Forecast 2015
$1,653	$20,655	$62,478	$55,633		$65,264

Historical Elements of Expense

(Historical EOE breakout will only be completed for Steam projects/programs of $500 thousand or more and, for all other organizations, projects/programs of $1 million or more.)

EOE	Actual 2011	Actual 2012	Actual 2013	Actual 2014	Historic Year (O&M only)	Forecast 2015
Labor	126	$1,128	$3,604	$3,366		$1,678
M&S	117	$780	$2,698	$5,281		$5,332
A/P	476	$11,128	$37,292	$32,089		$35,585
Other	293	-$80	-$969	-$2,052		$4,870
Overheads	641	$7,697	$19,853	$16,949		$17,799
Unassignable		$2				
Total	**$1,653**	**$20,655**	**$62,478**	**$55,633**		**$65,264**

Request ($000):

Request 2016	Request 2017	Request 2018	Request 2019	Request 2020
$56,140	$36,844	$26,064	$24,406	$11,707

Request by Elements of Expense

EOE	2016	2017	2018	2019	2020
Labor	$1,968	$1,335	$791	$654	$306
M&S	$4,354	$2,759	$1,897	$1,659	$796
A/P	$32,369	$20,822	$14,650	$14,157	$6,855
Other	$3,907	$2,444	$1,645	$1,559	$751
Overheads	$13,542	$9,484	$7,081	$6,377	$2,999
Total	**$56,140**	**$36,844**	**$26,064**	**$24,406**	**$11,707**

X	Capital
	O&M

2016 – Gas Operations

Project/Program Title	OTG - #2 Oil Conversions NYC
Project Manager	Christine Cummings
Hyperion Project Number	20747973, 20747976, 20747977
Organization's Project Number	N/A
Status of Project	Ongoing Program
Estimated Start Date	Ongoing
Estimated Completion Date	Ongoing
Work Plan Category	Regulatory Mandated

Work Description:

Installation of new gas services and/or mains to accommodate customer requests for conversions from #2 heating oil to natural gas in New York City (Manhattan, Bronx, Queens). Customers in this category are defined as #2 oil conversions.

The average #2 oil to gas conversion in this category tends to be smaller in load than #4 and #6 oil to gas conversions, requiring smaller diameter services and less main work. The total population of large #2 oil users in the CECONY service territory is approximately 14,000 buildings—more than twice that of #4 and #6 oil buildings.

The average #2 oil to gas conversion that requires a new service and/or main work is 1,850 Cubic Feet per Hour (CFH) in additional load, requires a 3" low-pressure service, and does not typically need significant main work to connect to the gas system. Additionally (based on the average load), each #2 oil conversion provides an estimated $16,000 in pure base revenue each year. Occasionally, groups ("clusters") of #2 oil burning building customers seek to connect simultaneously and they may require high pressure main extensions or additional main work.

Under current market conditions, the cost of #2 oil per gallon can be twice the cost of natural gas on a per gallon equivalent for the average residential customer, driving customers to convert to realize the commodity cost savings. Residential customers have also expressed concern about the continued reliability of oil (delivered by truck) versus natural gas in this region.

Justification Summary:

We forecast that there will be 527 new services and 5,512 feet of main installed in 2016 as a result of #2 oil to gas conversions in the New York City portion of Con Edison's service territory. The associated funding for these conversions totals $15.8 million; $12.5 million for services and $3.3 million for mains.

This forecast is based on the trend of customer requests submitted in the Customer Project Management System (CPMS) to convert from #2 oil to natural gas, and the historical units completed in the category. Additionally, there is a correlation between the company's Area Growth program for #4/6 oil to gas conversions and #2 oil conversions. As larger #4/6 oil to gas conversions are marketed and constructed each year, #2 oil conversions are also given the opportunity to convert at the same time. In 2011, we

received around 1,000 requests, 1,200 in 2012, 2,200 in 2013, and 2,500 in 2014. In the first five months of 2015, customer requests are down 20% when compared to the same timeframe last year.
Key Assumptions:

- 27 percent of requests result in service installations and main work, typically within eight to nine months from service request origination.
- 35 percent of services are installed in Manhattan, 36 percent in the Bronx and 29 percent in Queens. These ratios mirror actual customer requests received in 2014-2015.
- Engineering has identified specific main projects where additional main work is required. This includes a 2,300 foot high pressure main extension in the Bronx. Historically, #2 oil customers have required four feet of main for each service installation.

2017-2020

For years 2017 to 2019, the funding request represents the Company's strategy to convert 65% of large #2 oil to gas conversions over 20 years. Based on engineering completed for similar customers, 30% of #2 oil buildings only require a meter upgrade and their service is adequate to support their heating load. Other customers will require a service upgrade, meter upgrade, and on some occasions main work.
In total, from 2017-2020, over 1,700 service installations and almost 7,000 feet of main are planned to be installed. This infrastructure upgrade will require capital expenditures of $13 million in 2017, $12.8 million in 2018, $12.4 million in 2019, and $11.9 million in 2020.

Supplemental Information:

- Alternatives: There are no alternatives. As written in the gas tariff, Con Edison is responsible to furnish, place and construct at our expense up to a total of 100 feet of gas main extension and/or service line per metered dwelling unit.

- Risk of No Action: We will be in violation of the tariffs.

- Non-financial Benefits: The addition of new gas customers or customers who are using oil heat and are converting to gas heat has a direct impact on our Sustainability Strategy to continue to reduce methane emissions and to pursue additional oil-to-gas conversions. This program will also provide additional customer satisfaction.

- Summary of Financial Benefits (if applicable) and Costs: Natural gas represents a cleaner burning heating fuel than #2 oil, and currently provides significant savings in the commodity cost to the customer directly. Based on the average additional load, each customer provides annual revenues of $16,000. In 2016, this is estimated to total over $8 million.

- Technical Evaluation/Analysis: See Justification Summary section for technical evaluation and analysis.

- Project Relationships (if applicable): The budget for #4/6 oil-to-gas conversions is closely associated with this budget as it supports additional capacity for other conversions to natural gas. Both programs also utilize the Area Growth program for supporting conversions within defined neighborhoods through 2019.

- Basis for Estimate: The estimate is based on customer conversion trends and historical rate of service installations for this category in 2014 and 2015.

Total Funding Level ($000):

Historical Spend

Actual 2011	Actual 2012	Actual 2013	Actual 2014	Historic Year (O&M only)	Forecast 2015
N/A	N/A	$304	$12,734		$20,430

*Prior to 2014, this budget category was bundled in new business

Historical Elements of Expense

(Historical EOE breakout will only be completed for Steam projects/programs of $500 thousand or more and, for all other organizations, projects/programs of $1 million or more.)

EOE	Actual 2011	Actual 2012	Actual 2013	Actual 2014	Historic Year (O&M only)	Forecast 2015
Labor			$34	$1,040		$901
M&S			$14	$701		$1,736
A/P			$167	$7,529		$10,832
Other			$0	$(359)		$1,174
Overheads			$88	$3,820		$5,787
Measures			$0	$3		
Total			**$304**	**$12,734**		**$20,430**

Request ($000):

Request 2016	Request 2017	Request 2018	Request 2019	Request 2020
$15,841	$13,421	$13,233	$12,800	$12,381

Request by Elements of Expense:

EOE	2016	2017	2018	2019	2020
Labor	$746	$576	$523	$498	$471
M&S	$1,271	$1,025	$968	$919	$872
A/P	$8,750	$7,406	$7,231	$7,142	$7,003
Other	$1,147	$915	$862	$838	$813
Overheads	$3,927	$3,499	$3,649	$3,403	$3,222
Total	**$15,841**	**$13,421**	**$13,233**	**$12,800**	**$12,381**

X	Capital
	O&M

2017 – Gas Operations

Project/Program Title	OTG - Westchester Area Growth
Project Manager	Thomas Riviello
Hyperion Project Number	2GD0030
Organization's Project Number	N/A
Status of Project	Planning
Estimated Start Date	1/1/2017
Estimated Completion Date	12/31/2025
Work Plan Category	Strategic

Work Description:

This program is to strategically target multi-family and commercial non gas heating customers for conversion to natural gas for heat. In Westchester, there are 230,000 Con Edison gas customers. However, only 60% of those customers are using gas for heating. There are ~8,500 multi-family and/or commercial customers of the ~94,000 gas customers (40%) not using gas for heat. Westchester has 37 municipalities being served natural gas. However, 5 municipalities make up nearly 66% of the ~8,500 large non gas heating customers. These municipalities are Yonkers, White Plains, Mount Vernon, New Rochelle and Port Chester. The non-gas heating residential customers are similarly distributed between the municipalities.

This program is one component of our strategic initiative to expand the natural gas heating footprint within Westchester. The various components of the strategic initiative include:

1. Increase marketing efforts for residential gas non heating customers whose gas service is sized to support the gas heating demand and are eligible for the rebate program to offset conversion costs. This program requires only a meter replacement/upgrade to facilitate the gas heating footprint and enables customers to convert with minimal external disruptions/excavations.
2. Leverage other replacement programs to size the replacement services to facilitate future conversions to gas heat. In lieu of retaining the existing size of the gas service or downgrading the size of the service when performing work, we are actively sizing the gas service to accommodate future heating demand. This should increase the likelihood that the service is adequate when customers decide to convert to natural gas for heating in the future.
3. Explore opportunities to perform joint projects with municipalities. This will entail partnering with the municipalities and determining if their proposed plans align with either future expansion potential for areas that are not yet served natural gas and/or areas that need reinforcement to facilitate future conversion to natural gas for heat.
4. Coordination with main replacement program work to ensure sizing of the gas main accommodates this large growth potential. Nearly 2,100 of the 4,300 miles of gas main in the Con Edison gas system are within Westchester County. Of the 2,100 miles, 46% are considered leak prone pipe, which will be replaced over the next 20 years. In 2015, 32 miles were planned for replacement in Westchester and of that 32 miles, 50% of the replacement was planned in the five municipalities with the highest concentration of non-gas heating large customers. Our plan is to ensure that the main is appropriately sized now to minimize the impact on system reinforcement to facilitate growth in the future. This approach will also minimize duplication of street disruption to an area.
5. Target specific municipalities to facilitate conversions. This program, which is the purpose of the funding request outlined in this white paper, will target the marketing of gas heat to multi-family and commercial customers and reinforce the geographic area to facilitate heating conversion

growth through main extensions and reinforcement, as well as the installation of new regulator stations where necessary.

Justification Summary:

We have designed the multi-year infrastructure build-out in geographic areas and micro-areas. (Micro-areas are based on municipalities and will be administered in a phased in approach). The plan initially supports infrastructure build-out to capture approximately 50% of the total projected non-gas heating multi-family/commercial customers in a specific municipality. Importantly, our area and phase plan is designed to maintain flexibility to respond to unexpected events – including seeing more demand than we expect, or less. In order to guard against building for customers who ultimately choose not to take gas service for heating – and thereby burden their neighbors who do -- we will develop the details of a plan to require commitments from customers before we confirm the connection price for a particular area, and build it out. Our approach can be simply described as:

- Plan to 50% of potential large non gas heating customer conversions
- Build to actual commitments of all pending load up to planned capacity

This program will initially target the five municipalities with the highest volume of large commercial/multi-family non gas heating customers.

In 2016, there is a planned regulator station to be installed in White Plains. This regulator station will facilitate system expansion in White Plains. Therefore, the tentative plan is to start this system expansion program in White Plains for 2017. White Plains has nearly 600 multi-family/commercial customers that are not using gas for heating. White Plains has provided a list of the #4/#6 oil users. Of the nearly 600 non gas heating larger customers, there are 56 buildings using #4/#6 oil for heating. The plan in 2016 is to market to all 600 customers with a heightened focus on targeting the 56 #4/#6 oil customers. Based on the commitment to the conversions, significant reinforcement will be needed to in addition to the regulator station. In 2017, this reinforcement work and service connections will be completed under this program.

The table below represents the remaining four municipalities with the projected customers and associated loads:

Municipality	Commercial Population	Total Load, cfh	System Evaluation (50% of Total Load)
Port Chester	285	811,566	**405,783**
Mount Vernon	969	2,907,000	**1,453,500**
New Rochelle	795	2,385,000	**1,192,500**
Yonkers	2,338	7,014,000	**3,507,000**
Total	**4,387**	**13,117,566**	**6,558,783**

We anticipate that each municipality may need a new regulator station and significant main reinforcement and/or extensions. With the area growth model in place, these areas will be marketed in order to drive enough revenue to substantiate the build out for these customers.

Below is a tentative schedule of areas:
2017: White Plains
2018: Port Chester
2019: Mount Vernon phase 1
2020: Mount Vernon phase 2

2021: Mount Vernon phase 3
2022: Mount Vernon phase 4
2023: New Rochelle phase 1
2024: New Rochelle phase 2
2025: New Rochelle phase 3
2026: New Rochelle phase 4
2027: Yonkers phase 1
2028: Yonkers phase 2
2029: Yonkers phase 3

We anticipate the program to take one year in some municipalities and in other more densely populated areas, the plan would be to target the area in consecutive calendar years. Based on reinforcement and customer commitment the schedules would be subject to change – either accelerated or extended to effectively build out the system and maximize the growth potential in the geographic area.

Supplemental Information:

- Alternatives: Con Edison can review/evaluate each request and provide only the entitlement under the tariff. In many cases, this will accommodate moderate growth but will not accommodate significant growth in a geographical area. In addition, traditional methods may result in numerous street disruptions based on customer timelines to convert.

- Risk of No Action: We limit the availability to facilitate natural gas heating conversions in Westchester.

- Non-financial Benefits: During the PSC System Expansion proceedings, numerous barriers to conversions were identified such as:
    - Lack of knowledge/understanding
    - Cost of replacement of customer equipment
    - Contributions in aid of construction (CIACs) for customers that are more than 100 feet from a gas main
    - Convenience and timing
    - Clarification of the 100 foot rule will help with CIACs

  The purpose of this program is to enhance our marketing efforts in Westchester, which will support improving customer knowledge. Another objective is to facilitate expansion through similar approach taken in New York City (NYC), which resulted in a Tariff Amendment to support Area Growth in NYC. Our objective is to minimize the need for CIAC's by aggregating the reinforcement and the projected revenue to justify the area solution. Lastly, we will strive to provide clear time lines for conversions for all micro-growth areas and provide similar marketing approach at provided in NYC.

- Summary of Financial Benefits (if applicable) and Costs: The new mains and services in this program will add additional load to the gas system and increase revenue.

- Technical Evaluation/Analysis: N/A

- Project Relationships (if applicable): This program is contingent on amending the existing Tariff to replicate the provided in NYC to forester growth opportunities.

- Basis for Estimate: The estimate was based on the rules and regulations for the installation of mains and services as cited in the tariff PSC No: 9 Gas Leaf: 38 -38.2 General Rule III,

Total Funding Level ($000):

Historical Spend

Actual 2011	Actual 2012	Actual 2013	Actual 2014	Historic Year (O&M only)	Forecast 2015
0	0	0	0	0	0

Historical Elements of Expense

(Historical EOE breakout will only be completed for Steam projects/programs of $500 thousand or more and, for all other organizations, projects/programs of $1million or more.)

EOE	Actual 2011	Actual 2012	Actual 2013	Actual 2014	Historic Year (O&M only)	Forecast 2015
Labor						
M&S						
A/P						
Other						
Total						

Request ($000):

Budget 2015	Request 2016	Request 2017	Request 2018	Request 2019	Request 2020
0	0	10,101	10,322	10,305	10,334

Request by Elements of Expense

EOE	2016	2017	2018	2019	2020
Labor		$800	$400	$400	$400
M&S		$1,519	$1,519	$1,519	$1,519
A/P		$4,453	$4,994	$5,074	$5,143
Other		$520	$568	$575	$581
Overheads		$2,809	$2,841	$2,737	$2,691
Total		**$10,101**	**$10,322**	**$10,305**	**$10,334**

X	Capital
	O&M

2016 – Gas Operations

Project/Program Title	OTG - Westchester Conversions
Project Manager	Thomas Riviello
Hyperion Project Number	20764786, 21559230
Organization's Project Number	GDI16
Status of Project	Ongoing Program
Estimated Start Date	Ongoing
Estimated Completion Date	Ongoing
Work Plan Category	Regulatory Mandated

Work Description:

Install new gas mains and/or services to provide new or additional gas load to customers. This budget is applicable for all oil to gas customers in Westchester. This budget line anticipates conversions due to marketing, service replacement only work, as well as main extension and reinforcement to facilitate gas conversions. This budget does not include any regulator station installation work. This budget does not include future Westchester micro-area growth expansion initiatives. This is mandatory work.
Units per Year: The total units funded under this budget for services and gas main is listed below:

	Total Dollars (000s)	Units	Total Dollars (000s)	Units	Total Dollars (000s)	Units	Total Dollars (000s)	Units	Total Dollars (000s)	Units
Activity	**FY16**	**FY16**	**FY17**	**FY17**	**FY18**	**FY18**	**FY19**	**FY19**	**FY20**	**FY20**
Services	**$9,603**	**500**	**$10,654**	**540**	**$11,610**	**563**	**$12,749**	**615**	**$14,003**	**667**
Mains	**$6,939**	**12,000**	**$6,936**	**12,000**	**$6,935**	**12,000**	**$6,935**	**12,000**	**$6,937**	**12,000**
	$16,542		**$17,590**		**$18,545**		**$19,684**		**$20,940**	

Justification Summary:

We forecasted the minimum installation of 500 new services and 12,000 feet of new main is necessary to provide gas service to new customers and existing customers with increased load. Most jobs are small jobs requiring a single service and in some cases, a short main extension.

This budget includes all oil to gas conversions in Westchester. The projected service connections and main installation is based on 2014 YE and 2015 May YTD actual new business connections.

The low commodity cost for natural gas continues to drive the demand. In 2013, Traditional New Business demonstrated a significant increase in connections and associated main to support the connections. This growth has continued into 2014 and is projected to sustain going forward as economic conditions make natural gas the fuel of choice for new customers, as well as customers interested in converting to natural gas from electric and steam and in Westchester propane. This budget line item provides specific allocation of conversion customers in Westchester.

Supplemental Information:

- Alternatives: There are no alternatives. It is Con Edison's responsibility to furnish, place and construct at our expense up to a total of 100 feet of gas main extension and/or service line per metered dwelling unit.

- Risk of No Action: We will be in violation of the tariffs.

- Non-financial Benefits: The addition of new gas customers or customers who are seeking heating alternatives, natural gas presents a cleaner burning fuel choice. This indirectly supports our Environmental Sustainability Strategy to continue to reduce methane emissions. This program will provide additional customer satisfaction. In addition, this budget supports REV initiatives such as electric customers seeking distribution generation alternatives.

- Summary of Financial Benefits (if applicable) and Costs: Westchester conversions will generate revenue. It is estimated that ~80% of this budget is to support small residential conversions from oil to gas. At an estimated $1K revenue per customer for SC11 (1-4 dwelling) for 80% of these conversions and $12K revenue per customer for SC3 (>4 family) for 20% of these conversions, we project that this budget will support an incremental $1.9M annually of revenue.

- Technical Evaluation/Analysis: The requested funding is to support an increase in growth above the levels set in the joint proposal for the 2014-2016 rate case funding. In the past rate case, Traditional New Business included Westchester oil-to-gas conversion work. This program segregates the services and gas mains into a unique program and is separated completely from Traditional New Business.

- Project Relationships (if applicable): The new mains and services in this program will add additional load to the gas system and increase revenue.

- Basis for Estimate: Projected similar activity as seen in 2015 forecast. In 2016, we forecast a similar activity as seen in 2015. However, as we refine our strategy to expand our natural gas heating footprint in Westchester, we are projecting the volume to continue to increase in 2017 and beyond.

Total Funding Level ($000):

Historical Spend

Actual 2011	Actual 2012	Actual 2013	Actual 2014	Historic Year (O&M only)	Forecast 2015
	$0	$0	$4,028		

Historical Elements of Expense

(Historical EOE breakout will only be completed for Steam projects/programs of $500 thousand or more and, for all other organizations, projects/programs of $1million or more.)

EOE	Actual 2011	Actual 2012	Actual 2013	Actual 2014	Historic Year (O&M only)	Forecast 2015
Labor		$0	$0	$1,237		
M&S		$0	$0	$1,671		
A/P		$0	$0	$1,012		
Other		$0	$0	$121		
Total		$0	$0	$0		
		$0	$0	-$12		
		$0	**$0**	**$4,028**		

Request ($000):

Budget 2015	Request 2016	Request 2017	Request 2018	Request 2019	Request 2020
$12,900	$16,542	$17,590	$18,545	$19,684	$20,940

Request by Elements of Expense

EOE	2015	2016	2017	2018	2019	2020
Labor	N/A	$768	$800	$824	$905	$988
M&S	N/A	$971	$985	$1,034	$1,094	$1,164
A/P	N/A	$9,522	$9,984	$10,301	$11,081	$11,859
Other	N/A	$1,179	$1,205	$1,224	$1,313	$1,404
Overheads	N/A	$4,102	$4,616	$5,162	$5,293	$5,525
Total	**N/A**	**$16,542**	**$17,590**	**$18,545**	**$19,684**	**$20,940**

X	Capital
	O&M

2016 – Gas Operations

Project/Program Title	New Business - Traditional
Project Manager	Thomas Riviello
Hyperion Project Number	1GD1205, 1GD1207, 7GD0011, 7GD0811, 7GD1611, 7GD2421
Organization's Project Number	GDI03
Status of Project	Ongoing program
Estimated Start Date	Ongoing
Estimated Completion Date	Ongoing
Work Plan Category	Regulatory Mandated

Work Description:

Install new gas mains and/or services to provide new or additional gas load to customers. This budget is applicable for all new connections, exclusive of oil-to-gas conversions. This budget includes traditional new business customers, Distributed Generation, CNG, steam, and electric to gas conversions.

Units per Year: The total units requested under this budget below:

2016	# of services	Unit Cost	Total Cost
Manhattan	265	$31,683	$8,395,995
Bronx	230	$19,500	$4,485,000
Queens	275	$10,241	$2,816,275
Westchester	561	$19,200	$10,771,200
Lower 5 munis	289	$19,200	$5,548,800
TOTAL	**1,620**	**$19,764**	**$32,017,270**
Mains	**Main footage**	**Unit Cost**	**Total Cost**
Manhattan	11,000	$1,004	$11,044,000
Bronx	2,000	$500	$1,000,000
Queens	1,000	$540	$540,000
Westchester	10,500	$350	$3,675,000
Lower 5 Munis	1,500	$350	$525,000
TOTAL	**26,000**	**$646**	**$16,784,000**
Total NB Expenses			**$48,801,270**

Justification Summary:

We forecast the minimum installation of new services and mains necessary to provide gas service to new customers and existing customers with increased load. Most jobs are small requiring a single service and in some cases, a short main extension.

This budget includes all new business exclusive of oil to gas conversions. The projected service connections and main installation is based on 2014 YE and 2015 May YTD actual new business connections.

The low commodity cost for natural gas continues to drive demand. In 2013, Traditional New Business demonstrated a significant increase in connections and associated main to support the connections. This growth has continued into 2014 and is projected to continue going forward as economic conditions make natural gas the fuel of choice for new customers. Growth will also come from customers interested in converting to natural gas from electric, steam, and propane in Westchester. .

Supplemental Information:

- Alternatives: There are no alternatives. Con Edison is responsible to furnish, place, construct at our expense up to a total of 100 feet of gas main extension and/or service line per metered dwelling unit.

- Risk of No Action: We will be in violation of the tariffs and we will be losing potential revenue.

- Non-financial Benefits: The addition of new gas customers or customers who are seeking heating alternatives, natural gas presents a cleaner burning fuel choice. This indirectly supports our Environmental Sustainability Strategy to continue to reduce methane emissions. This program will provide additional customer satisfaction. In addition, this budget supports REV initiatives such as electric customers seeking distribution generation alternatives

- Summary of Financial Benefits (if applicable) and Costs: Traditional New Business generates revenue and it is estimated that ~75% of this budget is to support small residential heating loads and 25% is for larger customer heating connections. Therefore, it is estimated that the revenue per customer based on existing allowable revenue is in excess of $6M annually.

- Technical Evaluation/Analysis: N/A

- Project Relationships (if applicable): The new mains and services in this program will add additional load to the gas system and increase revenue. Based on the location of the regulator stations and planned area growth, some customers benefit from the additional capacity which in turn reduces any required main reinforcement to connect.

- Basis for Estimate: Below is the services that are estimated to be installed/replaced under Traditional New Business and is projected to be similar activity as seen in 2015 forecast.

Total Funding Level ($000):

Historical Spend

Actual 2011	Actual 2012	Actual 2013	Actual 2014	Historic Year (O&M only)	Forecast 2015
$29,428	41,619	68,178	44,536	N/A	$50,832

Historical Elements of Expense

(Historical EOE breakout will only be completed for Steam projects/programs of $500 thousand or more and, for all other organizations, projects/programs of $1million or more.)

EOE	Actual 2011	Actual 2012	Actual 2013	Actual 2014	Historic Year (O&M only)	Forecast 2015
Labor	$1,855	$4,404	$6,617	$5,766	N/A	
M&S	$2,081	$1,501	$1,017	$2,394	N/A	
A/P	$19,620	$23,256	$41,011	$26,907	N/A	
Other						
Total						

Request ($000):

Request 2016	Request 2017	Request 2018	Request 2019	Request 2020
$48,757	$51,903	$53,144	$53,410	$54,003

Request by Elements of Expense:

EOE	2015	2016	2017	2018	2019	2020
Labor	$3,976	$2,930	$3,073	$3,042	$3,109	$2,846
M&S	$2,641	$2,157	$2,218	$2,272	$2,315	$2,076
A/P	$22,738	$29,546	$30,739	$31,011	$31,622	$33,083
Other	$7,304	$3,186	$3,229	$3,157	$3,210	$3,330
Overheads	$13,107	$10,938	$12,644	$13,662	$13,154	$12,668
Total	**$49,766**	**$48,757**	**$51,903**	**$53,144**	**$53,410**	**$54,003**

X	Capital
	O&M

2017 – Gas Operations

Project/Program Title	OTG – Regulator Stations
Hyperion Project Number	20197989
Organization's Project Number	N/A
Status of Project	Ongoing
Estimated Start Date	Ongoing
Estimated Completion Date	December 2019
Work Plan Category	Regulatory

Work Description: Install new regulator stations throughout Manhattan, Bronx and Queens as a result of load growth associated with the conversion of #4 and #6 heating oil conversions to natural gas in New York City.

Justification Summary: The Gas Conversion Group has designed a multi-year infrastructure build-out plan in geographic areas and sub-areas (Sub-areas are called phases), called Area Growth. The plan supports infrastructure build-out to capture approximately 65% of the total available #4 and #6 loads in the Con Edison service territory. The plan will require commitment from customers before construction is commenced.

From 2017 to 2020, 31 Area Growth zones will be completed and an estimated 1,000 new large oil to gas conversions will be connected to the distribution system. As a result of this projected load growth, the following areas have been identified as potentially requiring new or upgraded district regulator stations based on the volume of service requests associated with these conversions:

2017	**Approximate Location**	**Division**	**Estimated Reinforcement with Regulator Station**
	W 161 St & Broadway	Manhattan	12" HP main at location.
	E 156 St & Melrose Ave	Bronx	8"HP main extension
	Edenwald Ave & E 233 St	Bronx	None
	Parsons Blvd & Sanford Av	Queens	8" HP main extension

2018	**Approximate Location**	**Division**	**Estimated Reinforcement with Regulator Station**
	W 135 St & Fredrick Douglas Ave	Manhattan	TP-LP reg or HP extension
	King St & 6 Ave	Manhattan	12" HP main at location
	W 183 St & Fort Washington Ave	Manhattan	HP main extension
	E 175 St & Topping Ave	Bronx	8"HP main from E 176 St

2019	**Approximate Location**	**Division**	**Estimated Reinforcement with Regulator Station**
	Morris Ave & E 166 St	Bronx	None
	W 86 St & West End Ave	Manhattan	HP main extension

The Company requires customer commitments to be made prior to the capital construction. Our approach is to plan for 65% of the load, and build to actual commitments of #2, #4, and #6 oil to gas conversion customers.

Supplemental Information:

- Alternatives: There are no alternatives. Con Edison is responsible to provide service under the Area Growth tariff.

- Risk of No Action: Con Edison will be in violation of the tariff and would not support the Clean Heat Initiative

- Non-financial Benefits: The addition of new gas customers or customers who are using oil and convert to natural gas for heating purposes has a direct impact on our sustainability strategy to continue to reduce methane emissions and to pursue additional oil-to-gas conversions. This program will provide additional customer satisfaction and have a positive environmental impact in support of OneNYC (formerly PlaNYC).

- Summary of Financial Benefits (if applicable) and Costs: Natural gas represents a cleaner burning heating fuel than #4 and #6 oil, and provides significant savings in the commodity cost to the customer directly. For financial benefits, see white paper "OTG – New Business, No 4 and 6 Oil to Gas Conversions NYC"

- Technical Evaluation/Analysis: See Justification Summary section for technical evaluation and analysis.

- Project Relationships (if applicable): This budget allocation applies to the recent regulation affecting #4/#6 oil-to-gas conversions. It is closely associated with the budget for "OTG - #4/6 Conversions NYC", and has an impact on supporting all gas expansion efforts.

- Basis for Estimate: The basis for this estimate assumes 65% of load growth in the Area Growth zones in each year, and the capital costs are estimated using engineering estimates for the regulator station and required main extensions to support the regulator.

Total Funding Level ($000):

Historical Spend

Actual 2011	**Actual 2012**	**Actual 2013**	**Actual 2014**	**Historic Year** (O&M only)	**Forecast 2015**

Historical Elements of Expense

(Historical EOE breakout will only be completed for Steam projects/programs of $500 thousand or more and, for all other organizations, projects/programs of $1million or more.)

EOE	**Actual 2011**	**Actual 2012**	**Actual 2013**	**Actual 2014**	**Historic Year** (O&M only)	**Forecast 2015**
Labor						
M&S						
A/P						
Other						
Total						

Request ($000):

Request 2016	**Request 2017**	**Request 2018**	**Request 2019**	**Request 2020**
N/A	$24,244	$21,669	$12,568	

Request by Elements of Expense

EOE	**2016**	**2017**	**2018**	**2019**	**2020**
Labor		$1,680	$1,470	$854	
M&S		$6,510	$5,696	$3,309	
A/P		$8,166	$7,156	$4,278	
Other		$1,258	$1,102	$651	
Overheads		$6,630	$6,245	$3,476	
Total		**$24,244**	**$21,669**	**$12,568**	

X	Capital
	O&M

2017 – Gas Operations

Project/Program Title	New Business - Regulator Stations
Project Manager	Russ Grogan
Hyperion Project Number	1GD9808
Organization's Project Number	N/A
Status of Project	Project Not Started
Estimated Start Date	2017
Estimated Completion Date	2027
Work Plan Category	Regulatory Mandated- New Business (Connections)

Work Description:

Install new regulator stations to support growth in Westchester as a result of new construction and oil to gas conversions. This program will directly support Area Growth in Westchester. Specifically, we estimate one new regulator station will be required in each Area Growth zone starting in 2017. The five municipalities that are targeted for Area Growth include; White Plains, New Rochelle, Mount Vernon, Port Chester and Yonkers. We estimate that the larger municipalities will require a multi-year plan to fully support growth. Therefore, for areas such as Mount Vernon, Yonkers and New Rochelle, we plan to 1 Regulator Station per year to support 1 area within the municipality. The completion of the Area Growth within the municipality will require multiple calendar years and multiple regulator stations.

This is a strategic growth plan which requires the installation of a new regulator stations to reinforce the existing gas system which will improve the system capacity to the area and enable future growth. This will enhance the customer experience by minimizing the customer's cost that they may have otherwise received after entitlement to support conversion to natural gas for heating.

Justification Summary:

In addition to accelerated plans to address #4/#6 oil to gas conversions in the NYC and accelerated plans to address micro-grid area growth zones in Westchester, traditional new business and #2 oil to gas conversions impact the reliability and availability of gas. As a result of the commodity price difference and the environmental benefits associated with natural gas, we continue to experience an increase in demand for natural gas. Consequently, the existing system will require new regulator stations to support Area Growth.

Supplemental Information:

- Alternatives: In lieu of installing new regulator stations, one alternative is to install significantly more gas main to supply additional high pressure gas feed to a low pressure area, the convert existing low pressure gas mains and services to high pressure. This would result in significantly more street and customer disruption, and a significantly higher cost of main reinforcement.

- Risk of No Action: The installation of new regulator stations to support Area Growth help mitigate the customer cost for conversions. If this program is not approved then the traditional approach of complying with the tariff entitlements, limits the benefit for lower customer costs for conversions.

The tariff provides up to 100' of gas main and 100' of gas service at no cost to a new firm heating customer. The tariff addresses conversions that are along a consecutive path but does not provide the optimal benefit to address customers that are not on a consecutive path.

- Non-financial Benefits: This program will support the Area Growth strategy which will directly support system expansion efforts. This effort will increase the availability of gas to meet customer demands for gas heating conversions and improve the overall customer experience.

- Summary of Financial Benefits (if applicable) and Costs: The installation of new Regulator Stations will minimize the scope of the main reinforcement required in the Area Growth zones while maximizing the capacity to future heating customers.

- Technical Evaluation/Analysis: This program mirrors certain aspects of the NYC #4/#6 Oil-To-Gas Area Growth Program. This program will support the Area Growth tariff and our system expansion efforts.

- Project Relationships (if applicable): This program is directly related to Westchester expansion, including Westchester Area Growth. As natural gas system continues to expand, there will continue to be a need to reinforce the system to support the new growth while maintaining the reliability of the existing firm customer base.

- Basis for Estimate: The request is based on recent average costs for installing one new Regulator Station and the applicable inlet and outlet piping.

Total Funding Level ($000):

Historical Spend

Actual 2011	Actual 2012	Actual 2013	Actual 2014	Historic Year (O&M only)	Forecast 2015

Historical Elements of Expense

EOE	Actual 2010	Actual 2011	Actual 2012	Historic Year (O&M only)	Actual 2013	Actual 2014
Labor						
M&S						
A/P						
Other						
Total						

Request ($000):

Request 2015	Request 2016	Request 2017	Request 2018	Request 2019	Request 2020
		$7,072	$7,225	$7,208	$7,234

Request by Elements of Expense:

EOE	2015	2016	2017	2018	2019	2020
Labor			$280	$280	$280	$280
M&S			$1,063	$1,063	$1,063	$1,063
A/P			$3,500	$3,496	$3,552	$3,600
Other			$398	$397	$398	$407
Overheads			$1,831	$1,989	$1,915	$1,884
Total			**$7,072**	**$7,225**	**$7,208**	**$7,234**

5. TECHNICAL OPERATIONS

LIQUID NATRUAL GAS (LNG):

X	Capital
	O&M

2017– Gas Operations/LNG Plant

Project/Program Title	LNG - Purchase and Install Vaporizers 1 and 2
Project Manager	Ari Flores
Project Engineer	Howard Goldberg
Project Number	PR.7GS9714 & PR.0GS1000
Status of Project	Planning
Estimated Start Date	January 2017
Estimated Completion Date	December 2018
Work Plan Category	Strategic

Work Description:

The Liquefied Natural Gas (LNG) plant serves as a peaking and contingency supply of natural gas to the firm gas customers.

PR.7GS9714 - Purchase And Install Vaporizer No. 2:
The vaporizer units convert LNG back to its vapor state for use by our customers. The plant has 5 vaporizer units of which units 4 &5 have been replaced. Vaporizer No. 3 will be replaced by year end 2015. Vaporizers 1, 2 are original plant equipment. This project replaces Vaporizer No. 2.

PR.0GS1000 - Purchase And Install Vaporizer No.1:
The vaporizer units convert LNG back to its vapor state for use by our customers. The plant has 5 vaporizer units of which units 4 &5 have been replaced. Vaporizer No. 3 will be replaced by year end 2015. Vaporizers 1, 2 are original plant equipment. This project replaces Vaporizer No. 1.

Justification Summary:

These vaporizers are the original units installed in the plant 41 years ago. The vaporizers are used to change the LNG back to its vapor state and vaporization is typically performed on the coldest days of the year. These existing units's pneumatic controls are subject to freezing rendering the unit inoperable due to the typically frigid temperatures when the equipment is required to operate. These units' burners are old technology and do not have combustion variability.

The Vaporizer equipment provides an hourly deliverability of 10,000 dt/hr. This send out provides natural gas to meet peak shaving demand and addresses supply contingencies. Loss of vaporization capacity could expose the Company to the incremental daily cost of natural gas. Replacing the two remaining original units will increase the reliability of plant's ability to vaporize. Other similar LNG plants have replaced similar Vaporizer units as a result of mechanical integrity concerns. The main mechanical integrity concern is the metallurgy of the units may result in castrophic failure in the event of a tube leak since these units sit in a wet environment for immediate use.

Supplemental Information:

- Alternatives: Operate unit until it fails.

- Risk of No Action: Vaporizer failure.

- Non-financial Benefits: Projects increases reliability of plant's availability to vaporize as needed.

- Summary of Financial Benefits (if applicable) and Costs: The vaporizers provide an hourly deliverability of 10,000dt/hr. The vaporization send out provides natural gas to meet peak shaving demand and addresses supply contingencies. Both of these typically occur when interstate pipeline gas capacity to New York City is in great demand. Loss of vaporization capacity could expose the Company to the incremental daily cost of natural gas.

- Technical Evaluation/Analysis: The remaining components have grown unreliable with age and replacement parts are not readily available. Lastly, the existing units' structural members are carbon steel and are experiencing extensive corrosion. The new units have redundant safety controls and increased process monitoring over existing units improving safety of performance. The new burners utilize the latest burner technological advancements, which improves performance. The new units also have electronic controls, increased process monitoring, and stainless steel structural members to alleviate corrosion issues.

- Project Relationships (if applicable): N/A

- Basis for Estimate: The current working estimate is $6,350,000, and this estimate is based on similar vaporizer installation expenses. This cost is based on similar past project the Company installed.

Total Funding Level ($000):

Historical Spend

Actual 2011	Actual 2012	Actual 2013	Actual 2014	Historic Year (O&M only)	Forecast 2015

Historical Elements of Expense

(Historical EOE breakout will only be completed for Steam projects/programs of $500 thousand or more and, for all other organizations, projects/programs of $1 million or more.)

EOE	Actual 2011	Actual 2012	Actual 2013	Actual 2014	Historic Year (O&M only)	Forecast 2015
Labor						
M&S						
A/P						
Other						
Total						

PR.7GS9714 - Purchase & Install Vaporizer No. 2:

Request ($000):

Request 2015	Request 2016	Request 2017	Request 2018	Request 2019	Request 2020
$0	$0	$3,250			$0

Request by Elements of Expense:

EOE	2015	2016	2017	2018	2019	2020
Labor			$700			
M&S			$151			
A/P			$1,768			
Other			$169			
Overheads			$462			
Total			**$3,250**			

PR.0GS1000 - Purchase And Install Vaporizer No.1:

Request ($000):

Request 2015	Request 2016	Request 2017	Request 2018	Request 2019	Request 2020
$0	$0		$1,700	$1,400	$0

Request by Elements of Expense

EOE	2015	2016	2017	2018	2019	2020
Labor				$733.00	$620.00	
M&S				$140.83	$86.80	
A/P				$356.60	$352.40	
Other				$43.19	$38.40	
Overheads				$426.40	$302.44	
Total				**$1,700.03**	**$1,400.04**	

X	Capital
	O&M

2016 – Gas Operations/LNG Plant

Project/Program Title	LNG - Liquefier Instrumentation
Project Manager	Ari Flores
Project Engineer	Howard Goldberg
Hyperion Project Number	KGS0200
Organization's Project Number	
Status of Project	Planning
Estimated Start Date	2019
Estimated Completion Date	2020
Work Plan Category	Strategic

Work Description:

Install instrumentation and control system to create monitoring and control capability for the Liquefied Natural Gas (LNG (Plant) liquefier to allow additional monitoring and control capability of the process during periods when the plant receives non-traditional-gulf-gas quality natural gas and to consolidate and centralize the plant's existing islands of controls into one Supervisory Control and Data Acquisition (SCADA) system.

The plant currently has the following dedicated control systems: tank density, temperature, and level instrumentation; carbon dioxide (CO2) instrument measuring the levels of CO2 entering and leaving the regeneration skid; a gas chromatograph measuring the constituents of the natural gas entering and leaving the plant; a process logic control system (PLCS) operating the expander lubrication oil system; and a distributed control system (DCS) operating and monitoring the turbine. All of these systems are stand alone with no overriding control system aggregating the data to adjust pressures, temperatures, and flows through the liquefier to accommodate system changes, or to monitor liquefaction production for density changes. The system's inability to make use of the gas chromatograph's capability to measure heavier hydrocarbons (C6+) that can potentially be delivered to the plant if the gas stream into NYC varies poses a risk if the natural gas quality changes from the traditional gas quality. This project provides an overall control system that will be able to measure, monitor, and trend the total liquefaction process. The project will start with a concept design. The project will start engineering, equipment purchase and installation in 2019 and be completed in 2020.

Justification Summary:

The plant Operators have insufficient instrumentation and no centralized control system is available to measure, indicate, monitor, record, analyze gas quality constituents and also control the liquefaction process in the event the LNG plant receives "non-traditional-gulf gas".

The current LNG plant objective is to fill the LNG tank safely with a minimum flow rate of 2.5 to 3.5 million standard cubic feet a day (MMSCFD). The existing liquefaction process has a limited real time integrated instrumentation and control systems that allow the process to be measured, monitored and operated during periods of changes in gas quality. Some constituents currently not being measured, monitored, recorded and trended are moisture, oxygen, and C6+, and liquefying a natural gas feed stream containing these constituents can create non-standard density liquid or slow/stop the liquefaction process.

Also, the current islands of control are not displayed to a common human machine interface. Instead they display on multiple pieces of standalone equipment either on a computer screen, wall control panel, or standalone remote device, leaving the Operator to respond to a problem in the process rather than adjusting as parameters begin to vary.

The other problem with multiple islands of control is that the LNG Operator does not view one standard type display, referred to as a Human Machine Interface (HMI), nor work with one alarm management system. The new instrumentation will meet current and anticipated future regulations for pipelines.

In addition, a centralized instrumentation and control system will streamline annual calibrations and inspections.

Supplemental Information:

- Alternatives: Continue to operate the plant without a governing control system for the liquefaction process.

- Risk of No Action: Operating the plant during periods of varying gas quality can create non-standard density liquid or reduce production to a point where the tank is not filled adequately for the winter. Non-standard density liquid can create stratification in the tank, which if gone unchecked can lead to a rollover event. A rollover event can create a boil-off condition that exceeds the tank's pressure control systems.

- Non-financial Benefits: Installing control instrumentation will allow for optimization of equipment and also serve to evaluate the liquefaction process by analyzing operating data collected in a data historian, which would be provided with the new control system.

- Summary of Financial Benefits (if applicable) and Costs: The plant hourly deliverability is 10,000 dt/hr. Failure to meet this sendout requirement when required exposes the Company to penalties from the interstate pipelines serving the Company. These penalties equate to ~$50/dt or $500,000 per hour if the plant is unavailable to meet required sendout.

- Technical Evaluation/Analysis: N/A

- Project Relationships (if applicable): N/A

- Basis for Estimate: Order of magnitude dollar value. Upon development of concept and then detail engineering the dollar value may need to be revisited.

Total Funding Level ($000):

Historical Spend

Actual 2011	Actual 2012	Actual 2013	Actual 2014	Historic Year (O&M only)	Forecast 2015

Historical Elements of Expense

(Historical EOE breakout will only be completed for Steam projects/programs of $500 thousand or more and, for all other organizations, projects/programs of $1million or more.)

EOE	Actual 2011	Actual 2012	Actual 2013	Actual 2014	Historic Year (O&M only)	Forecast 2015
Labor						
M&S						
A/P						
Other						
Total						

Request ($000):

Request 2016	Request 2017	Request 2018	Request 2019	Request 2020
$0	$0	$0	$1,163	$1,200

Request by Elements of Expense

EOE	2016	2017	2018	2019	2020
Labor				-	$420
M&S				$ 139.97	$86.60
A/P				$ 916.50	$456.80
Other				$ 92.84	$47.67
Overheads				$13.73	$188.72
Total				**$ 1,163.04**	**$1,200**

X	Capital
	O&M

2018– Gas Operations/LNG Plant

Project/Program Title	LNG - Purchase and Install Balance of Plant Instrumentation
Project Manager	Ari Flores
Project Engineer	Howard Goldberg
Hyperion Project Number	21477256
Organization's Project Number	N/A
Status of Project	Planning
Estimated Start Date	2018
Estimated Completion Date	2019
Work Plan Category	Strategic

Work Description:

Install instrumentation and control system to create monitoring and control capability to integrate the entire Liquefied Natural Gas (LNG) Plant: vaporizers, liquefier, LNG tank, boil-off compressors, security, and odorant system with the project objective to consolidate and centralize the plant's existing islands of controls into the one Supervisory Control and Data Acquisition (SCADA) system or Distributive Control System (DCS).

This project provides an overall plant control system that will be able to measure, monitor, and trend the total liquefaction process, vaporization, tank and other auxiliary systems such as boil off compressors, instrument air compressors, security intrusion detection and odorant system. The enhancements of this upgrade will include modernization of the Control Center to allow an Operator to centrally view, attend to alarms and adjust the operations for the liquefaction, vaporization, tank management, fire detection and security. The project will start with a concept design. The project will start engineering, equipment purchase and installation in 2018.

Justification Summary:

The LNG plant operators have insufficient instrumentation. No centralized control system is available to measure, indicate, monitor, record or analyze the entire plant centrally, as a result the inside control center operator is required to become mobile to make adjustments throughout the control center, possibly impacting the operators human performance and limiting the decision capability. In addition, with today's modern control system technology, control systems have the capability to monitor themselves and provide feedback when an issue with the device or communication occurs, resulting in greater reliability and availability for the LNG Plant.

The plant has modernized various plant systems over the years, such as vaporizer controls in mid 2000s and the turbine controls in the mid-90s. The remaining plant islands are pneumatic controls, simple control systems and program logic controllers. This has led to various communication platforms and control systems the plant has to operate, maintain and control. The modernization of the system will consolidate the various balance of systems and will have them communicate on one platform and centralize the information in a format the Operator may process, evaluate and respond to. In addition, the Operator will be able have response plans for each alarm. The proper immediate response will lead to a safer and more reliable plant. This correct response will reduce, during critical action, the human error and continue to

ensure safe, reliable and available operation of the LNG Plant. In addition, the operator does not have a central station where they can immediately pull information to gain the full picture of the plant status and then dive into detail to understand trends and patterns. With this project the LNG Plant will undergo a process hazard analysis to review, validate and incorporate alarming, shutdowns, and process analysis to incorporate the proper alarm and shutdown responses. Also, self-monitoring circuits and devices will help ensure the reliability of the plant. This can eliminate a potential hazard to life and property with faulty instrument loop when called upon to function.

Supplemental Information:

- Alternatives: Continue to operate the LNG Plant with various islands of controls. In addition continue to operate with existing pneumatic controls and with monitoring system synchronizing and time stamping the various islands of control. After a catastrophic event, the Company may not be able to analyze the sequence of events properly.

- Risk of No Action: Company will not have a current system with control center monitoring and analyzing capability. The Operator will not have the latest measurement, indication, monitoring and records systems to control and analyze the plant process. This may also impact the quality of reporting an event.

- Non-financial Benefits: The plant will share similar communication and control platforms that other Con Edison plants are currently operating. This will lead to a standardizing new control system. Overall this project will increase plants reliability and availability to operate.

- Summary of Financial Benefits (if applicable) and Costs:

- Technical Evaluation/Analysis: N/A

- Project Relationships (if applicable): This project will impact both the LNG plant regeneration skid and the liquefier instrumentation projects.

- Basis for Estimate: This project is currently in the concept design stage. Upon further detailed engineering, it may be re-estimated with the final engineering drawings.

Total Funding Level ($000):

Historical Spend

Actual 2011	Actual 2012	Actual 2013	Actual 2014	Historic Year (O&M only)	Forecast 2015

Historical Elements of Expense

(Historical EOE breakout will only be completed for Steam projects/programs of $500 thousand or more and, for all other organizations, projects/programs of $1million or more.)

EOE	Actual 2011	Actual 2012	Actual 2013	Actual 2014	Historic Year (O&M only)	Forecast 2015
Labor						
M&S						
A/P						
Other						
Total						

Request ($000):

Request 2016	Request 2017	Request 2018	Request 2019	Request 2020
$0	$0	$1,360	$0	$0

Request by Elements of Expense

EOE	2016	2017	2018	2019	2020
Labor			$373.90		
M&S			$140.62		
A/P			$560.90		
Other			$61.32		
Overheads			$223.33		
Total			**$1,360**		

X	Capital
	O&M

2017– Gas Operations/LNG Plant

Project/Program Title	LNG - Year Round Liquefier Operation
Project Manager	Ari Flores
Project Engineer	Howard Goldberg
Hyperion Project Number	20467367
Organization's Project Number	N/A
Status of Project	Planning
Estimated Start Date	2017
Estimated Completion Date	2018
Work Plan Category	Strategic

Work Description:

The Liquefied Natural Gas (LNG) plant liquefaction system utilizes a nitrogen expansion cycle as the refrigerant. This nitrogen expansion system uses multiple stages of nitrogen compression. The process of compression generates heat that is removed by a cooling water system. The cooling water system is not winterized and therefore cannot operate below freezing temperatures and requires draining for the winter. This project installs cooling equipment that is not temperature dependent in order to allow the LNG liquefier to operate year round. The project had a concept design completed in 2009. The project will start engineering, equipment purchase and install in 2017 and will be completed in 2018.

Justification Summary:

A conceptual study was performed by CHI Engineering Services in May 2011 to determine the most economical alternative. The study, which included life cycle and regulatory requirement constraints, concluded there are four feasible options with the option of replacing all water coolers with air coolers. The air cooler option was the best and most economical option. The current plant liquefaction system would require about 300 days of run time to fill the tank if it were emptied. Also, if the quality of natural gas being delivered to NYC varied from traditional constituents the liquefaction system would need to run at a lower rate to process the gas constituents exceeding plant design parameters such as ethane levels exceeding 3.75% of mole volume of the feed gas. The upgrade of the cooling system to operate during winter periods will allow the liquefier to operate for longer periods of time offsetting the lower production rates required to process varying natural gas qualities or to fill the tank due to high consumption.

Supplemental Information:

- Alternatives: Alternative to operation of the existing cooling water system year round would be to upgrade the plant's liquefaction capability. This option would require a redesign of the entire liquefaction process as opposed to simply modifying the cooling water process.

- Risk of No Action: Without year round operation of the cooling water system, the operation of the LNG plant liquefier would be limited to spring, summer, fall. Operational seasonal limits on the liquefier along with reduced liquefaction rate due to gas quality issues would limit the capability of the liquefier to fill the tank for the winter season.

- Non-financial Benefits: The plant is subject to a SPDES permit. The redesign of the system will alleviate the plant's discharge so a permit will no longer be required.

- Summary of Financial Benefits (if applicable) and Costs: The Financial benefit of year round operation is the avoided cost of modifying the liquefier to operate at full production with varying gas qualities. The longer operating season allows the plant to make up the production lost by liquefying out of specification gas. The benefit is related to the amount of liquefaction operations required during cold weather months in order to fill the LNG tank and the avoided cost of not having available LNG during the winter months. LNG is used to meet peak winter loads. The plant's availability as a supply asset to meet peak winter loads displaces approximately $100 million annually of interstate pipeline capacity. If gas quality changes to a point where the liquefier cannot be operated, then additional interstate pipeline capacity contracts would be required to replace the plant's capability.

- Technical Evaluation/Analysis: A conceptual study was performed by CHI Engineering Services in May 2011 to determine the most economical alternative including life cycle and regulatory requirements. The study concluded there are four feasible options with the option of replacing all water coolers with air coolers. The air cooler option was the best and most economical option.

- Project Relationships (if applicable): N/A

- Basis for Estimate: LNG Plant had a third party develop a concept design. After detail engineering has been completed, Con Edison may need to revisit the cost.

Total Funding Level ($000):

Historical Spend

Actual 2011	**Actual 2012**	**Actual 2013**	**Actual 2014**	**Historic Year** (O&M only)	**Forecast 2015**

Historical Elements of Expense

(Historical EOE breakout will only be completed for Steam projects/programs of $500 thousand or more and, for all other organizations, projects/programs of $1million or more.)

EOE	**Actual 2011**	**Actual 2012**	**Actual 2013**	**Actual 2014**	**Historic Year** (O&M only)	**Forecast 2015**
Labor						
M&S						
A/P						
Other						
Total						

Request ($000):

Request 2016	Request 2017	Request 2018	Request 2019	Request 2020
$0	$1,746	$440	$0	$0

Request by Elements of Expense

EOE	2016	2017	2018	2019	2020
Labor		$444.30	$93.50		
M&S		$ 66.62	$70.31		
A/P		$865.00	$196.00		
Other		$82.26	$23.16		
Overheads		$287.93	$57.03		
Total		**$1,746**	**$440**		

X	Capital
	O&M

2019 – Gas Operations/LNG Plant

Project/Program Title	LNG - Plant Boil-Off Compressor
Project Manager	Ari Flores
Project Engineer	Howard Goldberg
Hyperion Project Number	21477266
Organization's Project Number	N/A
Status of Project	Planning
Estimated Start Date	2019
Estimated Completion Date	2021
Work Plan Category	Strategic

Work Description:

The Liquefied Natural Gas (LNG) plant liquefies all gas stored on site. The liquefied natural gas is stored in a LNG tank with a capacity of 290,000 liquid barrels. The LNG tank naturally vaporizes in the tank which is known as boil-off. Per design, the LNG tank boils-off approximately 15% to 20% of tank volume a year. To remove the tank boil-off, the plant uses boil-off compressors and contingency equipment known as a ground combuster. Recapturing the boil-off utilizing the boil-off compressors provides credits to rate payers. The ground combuster equipment burns the boil-off so credits are not obtained because the boil-off is not recaptured. Currently, the plant operates have two boil-off compressors to remove boil-off from the LNG tank to protect the LNG Plant from an over pressurization situation. The LNG Plant has two boil-off compressors which are reciprocating compressors with a total discharge volume of approximately 50,000 Million Standard Cubic Feet per Hour (MSCFH). This project will install two new boil-off compressors. The current project plan is the project will start in 2019 with concept and detail engineering. In 2021, the equipment will be purchased and installed.

Justification Summary:

The boil-off compressor equipment is obsolete and the original equipment manufacturer is not available to provide parts and services. When a boil-off compressor fails, this lack of parts and service can results in the LNG Plant not having the boil-off compressor repairs turned around in a timely basis and the boil off being burned off in the ground combustor instead of being returned to the distribution system.

Increase down time of the boil-off compressors can result in the natural gas being burned through the ground combustor to maintain tank level. A credit will not be received to the customer for withdrawal to the distribution system. Lack of expertise to reverse engineer and the reduction of surplus parts may render the machines inoperable for long period of time. This project will also explore efficiency of new machines and increasing capacity of each machine.

Supplemental Information:

- Alternatives: The alternative is to continue to operate and maintain the existing boil-off Compressors and use parts not certified by manufacture and obtain parts through reverse engineering.

- Risk of No Action: Inability to recapture tank boil-off product

- Non-financial Benefits: This provides tank pressure protection without flaring to the environment. Upon change in barometric pressure the tank changes pressure and will increase pressure. This is when the LNG Operator turns the Compressors online.

- Summary of Financial Benefits (if applicable) and Costs: N/A

- Technical Evaluation/Analysis: N/A

- Project Relationships (if applicable): Not applicable.

- Basis for Estimate: Preliminary, full complete Concept design is required. Upon detail engineering design the cost will be re-evaluated and appropriated.

Total Funding Level ($000):

Historical Spend

Actual 2011	Actual 2012	Actual 2013	Actual 2014	Historic Year (O&M only)	Forecast 2015

Historical Elements of Expense

(Historical EOE breakout will only be completed for Steam projects/programs of $500 thousand or more and, for all other organizations, projects/programs of $1million or more.)

EOE	Actual 2011	Actual 2012	Actual 2013	Actual 2014	Historic Year (O&M only)	Forecast 2015
Labor						
M&S						
A/P						
Other						
Total						

Request ($000):

Request 2016	Request 2017	Request 2018	Request 2019	Request 2020
$0	$0	$0	$750	$1,450

Request by Elements of Expense

EOE	2016	2017	2018	2019	2020
Labor				-	$190
M&S				$138.88	$84.63
A/P				$542.70	$984.90
Other				$59.56	$94.39
Overheads				$8.86	$96.08
Total				**$750**	**$1,450**

X	Capital
	O&M

2018– Gas Operations/LNG Plant

Project/Program Title	LNG - Plant Motor Control Center
Project Manager	Ari Flores
Project Engineer	Howard Goldberg
Hyperion Project Number	21477271
Organization's Project Number	
Status of Project	Design
Estimated Start Date	2018
Estimated Completion Date	2019
Work Plan Category	Strategic

Work Description:

The LNG Plant has three feeders that supply power to a high tension vault substation, which powers the LNG Plant except the Salt Water Pump house. The high tension vault transformers step down the electric supply from 27kV to 480V, and then after the switch gear distributes to the motor control centers. The LNG Plant has three motor control centers which are original to the plant. The motor control centers are the primary distribution and isolation to each motor and electrical equipment at the plant.

The project is to engineer, procure and install a new modular motor control center parallel to the existing motor control center. Once the new modular modern motor control center is energized the existing motor control center will be de-energize and removed. The replacement motor control center will have adequate ventilations and be free of potential mediums that can result in severe failures or injuries. The new motor control centers will be installed a distance from the water deluge systems and natural gas which have the potential to short or create an explosion to the live electrical equipment. The project will start with a concept design. The project will start engineering, equipment purchase and install in 2018 and will be completed in 2019.

Justification Summary:

In the past several years, the motor control centers have resulted in significant failures. Two isolated incidents for two separate and distinct motor control center cubicles had failed catastrophically and resulted in other cubicles and associated equipment not being available for operation. The equipment is obsolete and replacement components are no longer available so third party retrofit work is done to ensure reliability and availability. A failure of this equipment has the potential to release significant energy that could result in a serious injury to control center employees if they were in the vicinity when a failure occurred. In addition, the motor control center room has a salt water deluge system supply that can result in severe water release and short the electrical equipment. The motor control centers will be located a distance away from the deluge system and the natural gas currently found in the same room, and the new motor control centers will be in their own separate motor control center modular structure which is installed on supports. This concept is similar to another installation found at another LNG Plant.

The motor control centers are original pieces of equipment. Currently, the motor control centers are installed in the control building in an environment with high risk to have water intrusion or gas leak which can result

in significant failure if either medium is released within the room rendering a high hazard safety situation which could lead to the plant being inoperable for an extended time duration.

Supplemental Information:

- Alternatives: Continue to operate the LNG Plant without completing this project.
- Risk of No Action: Severe failure of the motor control center can result in damage to property and injury to people. In addition, a failure could lead to an extended outage of the LNG plant.
- Non-financial Benefits: Reduce the risk of an injury or equipment damage.
- Summary of Financial Benefits (if applicable) and Costs: LNG is used to meet peak winter loads. The plant's availability as a supply asset to meet peak winter loads displaces approximately $100 million annually of interstate pipeline capacity.
- Technical Evaluation/Analysis: Through benchmarking efforts, the LNG Plant found a solution to replace the existing motor control centers. We discovered other LNG Plants of similar age replaced their motor control centers as a result of aging and failing motor control centers. This project is at the concept design phase.
- Project Relationships (if applicable): Not applicable.
- Basis for Estimate: This project is in the early concept design stage. Upon further detailed engineering, it may be re-estimated with the final engineering drawings.

Total Funding Level ($000):

Historical Spend

Actual 2011	Actual 2012	Actual 2013	Actual 2014	Historic Year (O&M only)	Forecast 2015

Historical Elements of Expense

(Historical EOE breakout will only be completed for Steam projects/programs of $500 thousand or more and, for all other organizations, projects/programs of $1million or more.)

EOE	Actual 2011	Actual 2012	Actual 2013	Actual 2014	Historic Year (O&M only)	Forecast 2015
Labor						
M&S						
A/P						
Other						
Total						

Request ($000):

Request 2016	Request 2017	Request 2018	Request 2019	Request 2020
$0	$0	$1,100	$900	$0

Request by Elements of Expense

EOE	2016	2017	2018	2019	2020
Labor					
M&S					
A/P			$998.40	$816.80	
Other			$88.66	$72.53	
Overheads			$12.98	$10.62	
Total			**$1,100**	**$900**	

X	Capital
	O&M

2019 – Gas Operations/LNG Plant

Project/Program Title	LNG - Plant Regeneration Skid
Project Manager	Ari Flores
Project Engineer	Howard Goldberg
Hyperion Project Number	21477273
Organization's Project Number	N/A
Status of Project	Planning
Estimated Start Date	2019
Estimated Completion Date	2020
Work Plan Category	Strategic

Work Description:

The Liquefied Natural Gas (LNG) Plant has a purification system to remove impurities such as carbon dioxide, moisture and mercaptan found in the natural gas. The system is a temperature swing adsorption system which uses heat up to 550 degrees Fahrenheit to rejuvenate the various absorber and dryer beds. The purification system has a regeneration skid which redirects flow of the treated, rejuvenated natural gas and cooling gas. Approximately 22 valves are on a timer on the regeneration skid. In addition, the skid has multiple heat exchangers, filters and blowers. This project is to install new piping, valves, heat exchangers, filters and a blower on a skid, have it delivered onsite and install it on the modular skid. When this project is complete the Purification system will have been completely replaced since the dryers were replaced in the early 2000s and the absorbers are scheduled to replace in 2015. In addition, the project will include monitoring and control capability included in the design to increase performance and reliability. This project will start with a concept design. The project will start engineering, equipment purchase and installation in 2019 and will be completed in 2020.

Justification Summary:

The regeneration skid has 40 year old non-coated insulted piping, equipment and valves located outside in the plant process area which are exposed to the elements. This can potentially impact the reliability and availability of the equipment. The rebuilt regeneration skid will use a high temperature coating and current piping standards. The existing valves are no longer supported by the manufacturer and the opportunity to perform repairs is limited. A failure of one of the valves can result in carbon dioxide leaving the regeneration skid and impacting the cold box. Failure of this on this type of equipment could result in a four to six week lead time to obtain replacement components. In addition, the Operators have insufficient instrumentation and no control system available to measure, indicate, monitor, record, and analyze the entire Purification system. The new system will have modern valves, that the OEM can support and a monitoring system to limit issues with impurities entering the cold box.

Supplemental Information:

- Alternatives: The regeneration skid was installed when the LNG Plant was originally built and the original equipment manufacturer is no longer available to provide support and service. This can lead to long lead times to obtain replacement components. This system is critical and an outage could lead to the plant not being able to fill the LNG tank. The current system does not have a

modern monitoring system and it relies fully on the operator to identify an abnormal condition such as a "valve hangs-up" which can cause the main heat exchanger to freeze. A main heat exchanger can have up to a two year long lead time to replace, and there is no backup.

- Risk of No Action: Continue to operate the plant with the existing regeneration system.

- Non-financial Benefits: The new piping and equipment will enhance the safety and reliability of the LNG Plant.

- Summary of Financial Benefits (if applicable) and Costs: LNG is used to meet peak winter loads. The plant's availability as a supply asset to meet peak winter loads has an estimated avoided demand cost of between approximately $37 million to $97 million annually depending on interstate pipeline capacity. If gas quality changes to a point where the liquefier cannot be operated, then additional interstate pipeline capacity contracts would be required to replace the plant's capability.

- Technical Evaluation/Analysis: N/A

- Project Relationships (if applicable):N/A

- Basis for Estimate: This project is the concept design stage. Upon further detailed engineering, it may be re-estimated based on the final engineering drawings.

Total Funding Level ($000):

Historical Spend

Actual 2011	Actual 2012	Actual 2013	Actual 2014	Historic Year (O&M only)	Forecast 2015

Historical Elements of Expense

(Historical EOE breakout will only be completed for Steam projects/programs of $500 thousand or more and, for all other organizations, projects/programs of $1million or more.)

EOE	Actual 2011	Actual 2012	Actual 2013	Actual 2014	Historic Year (O&M only)	Forecast 2015
Labor						
M&S						
A/P						
Other						
Total						

Request ($000):

Request 2016	**Request 2017**	**Request 2018**	**Request 2019**	**Request 2020**
$0	$0	$0	$1,300	$1,900

Request by Elements of Expense

EOE	**2016**	**2017**	**2018**	**2019**	**2020**
Labor				-	$430.00
M&S				$120.44	$209.41
A/P				$1,060.20	$957.30
Other				$104.00	$102.15
Overheads				$15.35	$201.14
Total				**$1,300**	**$1,900**

X	Capital
	O&M

2017– Gas Operations/LNG Plant

Project/Program Title	LNG - Rebuild Turbines 601 and 626
Project Manager	Ari Flores
Project Engineer	Howard Goldberg
Hyperion Project Number	21477275 & 2GS9720
Organization's Project Number	N/A
Status of Project	Planning
Estimated Start Date	2017
Estimated Completion Date	2020
Work Plan Category	Operationally Required

Work Description:

PR.21477275 - 2018 - Rebuild LNG Turbine Serial Number 601:
The Liquefied Natural Gas (LNG) plant liquefies the natural gas by operating a closed loop nitrogen refrigeration cycle driven by a turbine-compressor arrangement. This project rebuilds and then installs gas turbine serial number 601, which is targeted to come out of service in 2016-2017 depending on service hours. This rebuild is important to maintain a spare unit. This project will begin in 2018 with the rebuilding of the engine. The project is anticipated to be completed in May 2020 when the in service turbine serial number 626 will reach the run hours requiring it be overhauled. This project will start engineering, equipment purchase and installation in 2018 and will be completed in 2020.

PR.2GS9720 – Rebuild LNG Turbine Serial Number 626:
This purpose of this project is to rebuild and then install gas turbine serial number 626, which came out of service in 2011 in order to maintain a spare unit. This project began in 2014 with the rebuild of the engine which was finished in 2015. The project in service date is planned to be in May 2017 when in service turbine serial number 601 will reach the turbine run hours at which it is required to be overhauled. The funding for this project covers the cost to install the newly rebuilt turbine.

Justification Summary:

The original equipment manufacturer recommends tear down inspection and overhaul of the unit every 16,000 hours of operation. Failure to overhaul will result in poor unit performance, high operating temperatures, and air leakage out of the castings separating the stages. Overhaul of these units is required to maintain a spare.

Supplemental Information:

- Alternatives: None
- Risk of No Action: If the spare unit is not rebuilt, the LNG plant assumes the risk of failure of the in-service turbine and failure will result in a time delay associated with ordering the spare parts (6-12 months) to repair. This alternative will result in the loss of a liquefaction season since the turbine can only operate during a traditional seven month liquefaction seasons of May - November.

- Non-financial Benefits: Plant maintains a spare unit.

- Summary of Financial Benefits (if applicable) and Costs: The plant hourly deliverability is 10,000 dt/hr. Failure to meet this sendout requirement when required exposes the Company to penalties from the interstate pipelines serving the Company. These penalties equate to ~$50/dt or $500,000 per hour if the plant is unavailable to meet required sendout.

- Technical Evaluation/Analysis: N/A

- Project Relationships (if applicable): N/A

- Basis for Estimate: Based on the previous overhaul capital costs.

Total Funding Level ($000):

Historical Spend

Actual 2011	Actual 2012	Actual 2013	Actual 2014	Historic Year (O&M only)	Forecast 2015

Historical Elements of Expense

(Historical EOE breakout will only be completed for Steam projects/programs of $500 thousand or more and, for all other organizations, projects/programs of $1million or more.)

EOE	Actual 2011	Actual 2012	Actual 2013	Actual 2014	Historic Year (O&M only)	Forecast 2015
Labor						
M&S						
A/P						
Other						
Total						

PR.2GS9720 - Rebuild LNG Turbine Serial Number 626:

Request ($000):

Request 2016	Request 2017	Request 2018	Request 2019	Request 2020
$0	$450	$0	$0	$0

Request by Elements of Expense

EOE	2016	2017	2018	2019	2020
Labor		$80.80			
M&S					
A/P		$289.60			
Other		$25.72			
Overheads		$53.93			
Total		**$450**			

PR.21477275 - 2018 - Rebuild LNG Turbine Serial Number 601:

Request ($000):

Request 2016	Request 2017	Request 2018	Request 2019	Request 2020
$0	$	$ 216	$223	$900

Request by Elements of Expense:

EOE	2016	2017	2018	2019	2020
Labor			-	-	$300.00
M&S			-	-	$108.50
A/P			$196.00	$202.40	$319.00
Other			$17.40	$17.97	$37.21
Overheads			$2.55	$2.63	$135.31
Total			**$ 216**	**$223**	**$900**

X	Capital
	O&M

2017– Gas Operations/LNG Plant

Project/Program Title	LNG - Reconditioning of Plant Structures
Project Manager	Ari Flores
Project Engineer	Jed Khandji
Hyperion Project Number	7GS9715, 7GS9716
Organization's Project Number	
Status of Project	PR.7GS9715: Engineering and permitting PR.7GS9716: Not Started
Estimated Start Date	2017
Estimated Completion Date	2017
Work Plan Category	Strategic

Work Description:

The Liquefied Natural Gas (LNG) plant serves as a peaking and contingency supply of natural gas to the firm gas customers. This white paper covers the reconditioning of two existing structures located at the LNG Plant. Below is a description of the improvements that will take place:

PR.7GS9715 - Storage Building Refurbishment:
The LNG plant storeroom 49 building is used to house the maintenance equipment, safety equipment, and materials used to operate the plant. The building also serves as a workshop to perform maintenance and instrumentation calibrations. This project replaces the walls, doors, louvers, and roof of the building and overall reconditions the structure as a result of 40-years of being sprayed by salt water by the existing deluge system. In addition, this project will install catwalks on the new roof. The project is in the detail engineering design phase and then will be filed with the NYC Department of Buildings. This project will be completed in 2017.

PR.7GS9716 – LNG – Reconditioning of Plant Structures:
The LNG plant fire truck garage building is used to house the fire truck and maintenance equipment used to operate the plant. This project replaces the walls, doors, louvers, and roof of the building and overall reconditions the structure as a result of 40-years of being sprayed by salt water by the existing deluge system. In addition, this project will install catwalks on the new roof. The project is in the detail engineering design phase and then will be filed with the NYC Department of Buildings. This project will be completed in 2017.

Justification Summary:

The two structures are protected from radiant heat resultant from a LNG tank fire by a deluge system. The deluge system is supplied water from the LNG plant's salt water fire protection system. The deluge system is required to be tested annually by the FDNY. Operating the system for the required test envelops the building with salt water. This salt water deluge exacerbates the corrosion of the steel elements. The steel elements have corroded to the point where the wall assemblies are no longer securely fastened to the structural elements. The buildings are used for technicians, bench testing, and other daily maintenance, so the structural integrity of the buildings is necessary to ensure the safety of employees.

Supplemental Information:

- Alternatives: The alternative is to construct a new building. This project allows for re-use of existing structural elements.

- Risk of No Action: The existing structure would be extensively damaged if impacted by a major storm or hurricane with wall and roof elements falling off and becoming blowing debris. The building not having structural integrity is a safety hazard.

- Non-financial Benefits: Replacing the wall and roof elements enhances safety by eliminating potential falling and blowing debris.

- Summary of Financial Benefits (if applicable) and Costs: Replacement of the wall, roof, and door elements is more economical than constructing a totally new structure, including the steel structural elements.

- Technical Evaluation/Analysis: Each building is a "Butler" type structure that can be fabricated by individual components so a complete tear down of the existing structure and construction of a new structure is not required. The same methodology was already utilized for two other LNG plant buildings.

- Project Relationships (if applicable): Not applicable.

- Basis for Estimate: The current working estimate for installation is approximately $845,000 and this order of magnitude estimate is based on preliminary concept design.

Total Funding Level ($000):

Historical Spend

Actual 2011	Actual 2012	Actual 2013	Actual 2014	Historic Year (O&M only)	Forecast 2015

Historical Elements of Expense

(Historical EOE breakout will only be completed for Steam projects/programs of $500 thousand or more and, for all other organizations, projects/programs of $1 million or more.)

EOE	Actual 2011	Actual 2012	Actual 2013	Actual 2014	Historic Year (O&M only)	Forecast 2015
Labor						
M&S						
A/P						
Other						
Total						

PR.7GS9715 - Storage Building Refurbishment:

Request ($000):

Request 2016	Request 2017	Request 2018	Request 2019	Request 2020
	$365	$0	$0	$0

Request by Elements of Expense:

EOE	2016	2017	2018	2019	2020
Labor					
M&S					
A/P		$331.30			
Other		$29.42			
Overheads		$4.31			
Total		**$365**			

PR.7GS9716 - Rebuild of the Fire Truck Garage Building:

Request ($000):

Request 2016	Request 2017	Request 2018	Request 2019	Request 2020
	$480	$0	$0	$0

Request by Elements of Expense:

EOE	2016	2017	2018	2019	2020
Labor					
M&S					
A/P		$435.6			
Other		$38.68			
Overheads		$5.66			
Total		**$480**			

X	Capital
	O&M

2017– Gas Operations/LNG Plant

Project/Program Title	LNG Plant- Replacement of Dry Chemical Fire Suppression System Zones 5 & 6A
Project Manager	Ari Flores
Project Engineer	Howard Goldberg
Hyperion Project Number	2GS9700
Organization's Project Number	
Status of Project	Planning
Estimated Start Date	2017
Estimated Completion Date	2018
Work Plan Category	Strategic

Work Description:

The Liquefied Natural Gas (LNG) plant serves as a peaking and contingency supply of natural gas to Con Edison's firm gas customers.

Replace the existing dry chemical fire control units for zones 5 & 6A and the systems associated discharge piping with new Ansul dry chemical units and new discharge piping designed for the intended fire protection zone coverage. These two zones are two of the few remaining zones which do not have the modern Ansul dry chemical units. This project will start in 2017 and be installed in 2018.

Justification Summary:

The LNG plant utilizes dry chemical fire protection units, which are located throughout the plant as required by the FDNY and NFPA 59A. The original equipment is over 35 years old. Technical support and parts are not available because the manufacturer is no longer in business. Parts are being provided from off the shelf components with limited availability. Ansul units have already been installed in all other plant locations. The reliability of the fire protection units is critical to sustaining FDNY approval for continued plant operations. As noted in NFPA-59A Draft Evaluation, obsolete fire equipment should be scheduled for replacement. This project will replace the remaining original units in service.

Supplemental Information:

- Alternatives: The existing fire suppression units are no longer manufactured, parts are not available and are obsolete. LNG plant can continue to operate the obsolete units at risk. The risk is equipment components fail, improper fire suppression and this may result in injury, damage to property and being out of service for a prolonged time. The LNG Plant cannot operate process systems with out-of-service automatic dry chemical units protecting the process area.

- Risk of No Action: Loss of the LNG Plant fire protection system in impacted zones.

- Non-financial Benefits: Fire protection is mandated for the plant by NYC Rules and Regulations. FDNY will order plant out of service is system is not maintained.

- Summary of Financial Benefits (if applicable) and Costs: The plant's availability as a supply asset to meet peak winter loads displaces approximately $100 million annually of interstate pipeline capacity. Without dry chemical fire protection system to the plant, the LNG Plant may not be able to fill the LNG tank, so additional interstate pipeline capacity contracts would be required to replace the plant's capability.

- Technical Evaluation/Analysis: N/A

- Project Relationships (if applicable):N/A

- Basis for Estimate: Based on previous units purchased and installed several years ago.

Total Funding Level ($000):

Historical Spend

Actual 2011	Actual 2012	Actual 2013	Actual 2014	Historic Year (O&M only)	Forecast 2015

Historical Elements of Expense

(Historical EOE breakout will only be completed for Steam projects/programs of $500 thousand or more and, for all other organizations, projects/programs of $1million or more.)

EOE	Actual 2011	Actual 2012	Actual 2013	Actual 2014	Historic Year (O&M only)	Forecast 2015
Labor						
M&S						
A/P						
Other						
Total						

Request ($000):

Request 2016	Request 2017	Request 2018	Request 2019	Request 2020
	$245	$400		

Request by Elements of Expense

EOE	2016	2017	2018	2019	2020
Labor			$35.00		
M&S			$70.31		
A/P		$222.40	$243.20		
Other		$19.75	$27.35		
Overheads		$2.89	$24.13		
Total		**$245.04**	**$400**		

TUNNELS:

X	Capital
	O&M

2016-2020 – Gas Operations / Tunnel Maintenance

Project/Program Title	Various Tunnel Properties - Steel Replacement Program
Project Manager	Victor Billinghurst
Hyperion Project Number	10106038
Organization's Project Number	N/A
Status of Project	Ongoing
Estimated Start Date	2018
Estimated Completion Date	2018
Work Plan Category	Strategic- System and Component Upgrades

Work Description:

This is the continuation of an existing program to rehabilitate/replace deteriorated structural steel members throughout the eight tunnels Con Edison owns and operates. The steel structures throughout the tunnels are utilized as support for critical infrastructure such as gas mains, electric feeders, and steam mains. Visual inspections are completed to monitor the structures and replacements are prioritized and regularly completed based on severity of corrosion.

Justification Summary:

Structural steel is continually exposed to salt and water infiltration causing corrosion. Based on regular inspections, it has been determined that there are approximately 1,000 pieces of structural steel members that require total replacement. These members were identified for replacement due to deteriorating webs and flanges. Existing carbon steel members are prioritized and will be replaced with new corrosion resistant steel.

Supplemental Information:

- Alternatives: One alternative for this program is to aggressively scrape the members, and clean and paint them with an epoxy paint system. This is not a viable alternative since this work will not address the loss of strength due to corrosion, which has left holes in the flanges and webs.

- Risk of No Action: If beams are not replaced they will continue to deteriorate, placing tunnel facilities in jeopardy.

- Non-financial Benefits: Increased safety and reliability.

- Summary of Financial Benefits (if applicable) and Costs: Installing corrosion resistant steel is expected to provide marginal long term financial benefit. The benefit of this program is largely to reduce risk and promote reliability of critical infrastructure in the tunnels.
- Technical Evaluation/Analysis: Gas Engineering inspections have identified corroded steel members as a risk. When corrosion compromises integrity, the steel members are replaced.

- Project Relationships (if applicable): N/A

- Basis for Estimate: The estimate is based on similar work completed in various tunnels.

Total Funding Level ($000):

Historical Spend

Actual 2011	Actual 2012	Actual 2013	Actual 2014	Historic Year (O&M only)	Forecast 2015
		$0	$550		

Historical Elements of Expense

(Historical EOE breakout will only be completed for Steam projects/programs of $500 thousand or more and, for all other organizations, projects/programs of $1million or more.)

EOE	Actual 2011	Actual 2012	Actual 2013	Actual 2014	Historic Year (O&M only)	Forecast 2015
Labor						
M&S						
A/P						
Other						
Total						

Request ($000):

Request 2015	Request 2016	Request 2017	Request 2018	Request 2019	Request 2020
$230			$996		$500

Request by Elements of Expense

EOE	2015	2016	2017	2018	2019	2020
Labor	$23			$100		$130
M&S	$37			$163		$109
A/P	$135			$600		$177
Other	$15			$67		$25
Overheads	$20			$66		$59
Total	**$230**			**$996**		**$500**

X	Capital
	O&M

2016-2020 – Gas Operations / Tunnel Maintenance

Project/Program Title	Ravenswood Tunnel - Electric Upgrade
Project Manager	Victor Billinghurst
Hyperion Project Number	1TF9706
Organization's Project Number	N/A
Status of Project	Planning
Estimated Start Date	2017
Estimated Completion Date	2017
Work Plan Category	Strategic - System and Component Upgrades

Work Description:

The existing electric service in the tunnel is at least 20 years old and is corroded and unreliable. The lighting in the tunnel has been evaluated by the Company's lighting expert and deemed unsatisfactory. Temporary electric has to be brought into the tunnel in order to weld to avoid tripping breakers in the existing electric panel. Since this tunnel contains natural gas all electrical components must be Class 1 Division 1 rated for safety.

The objective is to install new electrical service in the Ravenswood tunnel, as per the engineering design and drawings. An engineering consultant will design new electric service for the tunnel and provide specifications and drawings. Temporary power will be provided during construction, and the existing electrical components in the tunnel removed.

Justification Summary:

Current electrical components in the tunnel have outlived their useful life. New electrical components are expected to last approximately 15-20 years. New electrical service will allow for increased capacity and welding outlets to facilitate large construction projects in the tunnel without the need for providing temporary services.

Supplemental Information:

- Alternatives: Continue to repair existing electrical service and components. This alternative is not recommended as electrical system failures will delay projects and put employees at risk.

- Risk of No Action: Lose electrical service in tunnel. Additionally, some fixtures and boxes are so corroded that they can fall under their own weight creating a cascading effect in the tunnel.

- Non-financial Benefits: Increased safety, reliability, efficiency, and customer satisfaction.

- Summary of Financial Benefits (if applicable) and Costs: The capital cost of this project is estimated to be $1,323,000.

- Technical Evaluation/Analysis: Upgraded electrical service to be designed by an engineering consultant.

- Project Relationships (if applicable): This project will commence following the installation of a new 8 inch high pressure gas main in the tunnel and storm hardening of the head houses is completed.

- Basis for Estimate: The estimated cost is an order of magnitude estimate. A refined estimate will be submitted with the detailed engineering design.

Total Funding Level ($000):

Historical Spend

Actual 2011	Actual 2012	Actual 2013	Actual 2014	Historic Year (O&M only)	Forecast 2015

Historical Elements of Expense

(Historical EOE breakout will only be completed for Steam projects/programs of $500 thousand or more and, for all other organizations, projects/programs of $1million or more.)

EOE	Actual 2011	Actual 2012	Actual 2013	Actual 2014	Historic Year (O&M only)	Forecast 2015
Labor						
M&S						
A/P						
Other						
Total						

Request ($000):

Request 2016	Request 2017	Request 2018	Request 2019	Request 2020
	$1,323			

Request by Elements of Expense

EOE	2016	2017	2018	2019	2020
Labor		$350			
M&S		$189			
A/P		$498			
Other		$60			
Overheads		$226			
Total		**$1,323**			

X	Capital
	O&M

2016-2020 – Gas Operations / Tunnel Maintenance

Project/Program Title	Ravenswood Tunnel - NYF Gas Main Rollers
Project Manager	Victor Billinghurst
Hyperion Project Number	2TF9200
Organization's Project Number	N/A
Status of Project	Planning/Engineering Design
Estimated Start Date	2017
Estimated Completion Date	2020
Work Plan Category	Strategic - System and Component Upgrades

Work Description:

This is a five year program to replace the roller supports for the 30 inch New York Facility (NYF) gas main in the Ravenswood Tunnel. There are a total of 101 roller assemblies from one end of the tunnel to the other end. The existing rollers will be replaced with a polymer roller with stainless steel hardware. The 30 inch NYF gas main is located directly below six 138 kV feeders. The steel associated with the feeder racks also needs to be replaced. Because these facilities are located in such close proximity to each other these programs will be completed in tandem.

Justification Summary:

The roller assemblies for the 30" NYF gas main are exposed to heavy salt and water infiltration that is inherent in the Ravenswood tunnel. The tunnel was built in 1895 and is cut through bedrock. It was not constructed with a concrete liner to minimize the water and salt infiltration. The tunnel is also very narrow and congested with other facilities including a steam main and fuel oil line, making for difficult maintenance and repair activities. These feeder racks and rollers have varying degrees of corrosion ranging from moderate to severe and will be replaced as part of a capital program over five years.

Supplemental Information:

- Alternatives: Cleaning of the existing gas main rollers and greasing is not recommended because the amount of labor involved to temporarily raise the main and properly clean, paint, and grease the existing rollers would be virtually the same as if we were to replace them.

- Risk of No Action: Gas main roller assemblies could bind and fail abruptly, jeopardizing the reliability of the 30 inch NYF gas main.

- Non-financial Benefits: Increased safety, reliability, efficiency, and customer satisfaction.

- Summary of Financial Benefits (if applicable) and Costs: The capital cost to replace the NYF gas main rollers is approximately $2,045,000. This estimate is based upon 101 supports being removed and replaced.

- Technical Evaluation/Analysis: An evaluation of this project was conducted using Jenny Engineering. The study clearly indicated the necessity to replace all of the feeder racks and NYF gas main rollers.

- Project Relationships (if applicable): Because the electric feeders (PR.0TF9703, NYS Gas Main Rollers Rvnswd Tun) and gas main facilities are located in such close proximity to each other these programs will be completed in tandem.

- Basis for Estimate: The estimates are based on detailed engineering designs.

Total Funding Level ($000):

Historical Spend

Actual 2011	Actual 2012	Actual 2013	Actual 2014	Historic Year (O&M only)	Forecast 2015
			$246		

Historical Elements of Expense

(Historical EOE breakout will only be completed for Steam projects/programs of $500 thousand or more and, for all other organizations, projects/programs of $1million or more.)

EOE	Actual 2011	Actual 2012	Actual 2013	Actual 2014	Historic Year (O&M only)	Forecast 2015
Labor						
M&S						
A/P						
Other						
Total						

Request ($000):

Request 2016	Request 2017	Request 2018	Request 2019	Request 2020
$0	$626	$918	$500	$500

Request by Elements of Expense

EOE	2016	2017	2018	2019	2020
Labor		$161	$231	$130	$130
M&S		$120	$175	$109	$109
A/P		$213	$330	$172	$177
Other		$29	$44	$24	$25
Overheads		$104	$138	$65	$59
Total		**$626**	**$918**	**$500**	**$500**

X	Capital
	O&M

2016-2020 – Gas Operations / Tunnel Maintenance

Project/Program Title	Ravenswood Tunnel - Feeder Supports
Project Manager	Victor Billinghurst
Hyperion Project Number	0TF9703
Organization's Project Number	N/A
Status of Project	Planning/Engineering Design
Estimated Start Date	2017
Estimated Completion Date	2020
Work Plan Category	Strategic - System and Component Upgrades

Work Description:

This is a five year program to replace the structural steel support beams and rollers, known as feeder racks, which support six 138kV feeders in the Ravenswood Tunnel. There are a total of 101 feeder racks with 606 feeder rollers from one end of the tunnel to the other end. Located directly below the six 138 kV feeders is one 30 inch New York Facility (NYF) gas main. The gas main is supported by 101 roller assemblies from one end of the tunnel to the other end. Existing carbon steel racks will be replaced with corrosion resistant Corten (A588) steel. The existing rollers will be replaced with a polymer roller with stainless steel hardware. Because the gas and electric facilities are located in such close proximity to each other these programs will be completed in tandem.

Justification Summary:

The steel associated with the feeder racks and gas main rollers are exposed to heavy salt and water infiltration that is inherent in the Ravenswood tunnel. The tunnel was built in 1895 and is cut through bedrock. It was not constructed with a concrete liner to minimize the water and salt infiltration. The tunnel is also very narrow and congested with other facilities including a steam main and fuel oil line, making for difficult maintenance and repair activities. These feeder racks and rollers have varying degrees of corrosion ranging from moderate to severe and will be replaced as part of a capital program over five years.

Supplemental Information:

- Alternatives: Removing rust and painting the feeder supports. This would clean up some areas of rust but will not increase the strength of the supports due to the overall deterioration of steel.

- Risk of No Action: If the feeder racks are not replaced there is an increased risk of a catastrophic failure jeopardizing all six feeders.

- Non-financial Benefits: Increased safety, reliability, efficiency, and customer satisfaction.

- Summary of Financial Benefits (if applicable) and Costs: The capital cost to replace the feeder racks is approximately $2,044,000. This estimate is based upon 101 supports and 606 rollers being removed and replaced.

- Technical Evaluation/Analysis: An evaluation of this project was conducted using Jenny Engineering. The study clearly indicated the necessity to replace all of the feeder racks and NYF gas main rollers.

- Project Relationships (if applicable): Because the electric feeders and gas main (PR. 2TF9200, 30 Gas Main Structure Support In The Ravenswood Tunnel) facilities are located in such close proximity to each other these programs will be completed in tandem.

- Basis for Estimate: The estimates are based on detailed engineering designs.

Total Funding Level ($000):

Historical Spend

Actual 2011	Actual 2012	Actual 2013	Actual 2014	Historic Year (O&M only)	Forecast 2015
			$400		

Historical Elements of Expense

(Historical EOE breakout will only be completed for Steam projects/programs of $500 thousand or more and, for all other organizations, projects/programs of $1million or more.)

EOE	Actual 2011	Actual 2012	Actual 2013	Actual 2014	Historic Year (O&M only)	Forecast 2015
Labor						
M&S						
A/P						
Other						
Total						

Request ($000):

Request 2016	Request 2017	Request 2018	Request 2019	Request 2020
$0	$627	$918	$500	$500

Request by Elements of Expense

EOE	2016	2017	2018	2019	2020
Labor		$161	$231	$130	$130
M&S		$120	$175	$109	$109
A/P		$212	$330	$172	$177
Other		$29	$44	$24	$25
Overheads		$105	$138	$65	$59
Total		**$627**	**$918**	**$500**	**$500**

X	Capital
	O&M

2016-2020 – Gas Operations / Tunnel Maintenance

Project/Program Title	Bronx River Tunnel - Hoistway
Project Manager	Victor Billinghurst
Hyperion Project Numbers	10106039
Organization's Project Numbers	N/A
Status of Projects	Projects not started
Estimated Start Date	2017
Estimated Completion Date	2017
Work Plan Category	Strategic - Public and Employee Safety

Work Description:

Install new hoistway at Bronx River Tunnel. Professional Engineer to design new hoist support structure and submit construction drawings. Remove existing support structure and dispose. Fabricate and install new support structure including masonry footings, steel erection, and coating as per construction drawings.

Justification Summary:

New hoistway structure to be installed in order to replace existing substandard structure. The new structure will allow for an increased load capacity for hoisting material in and out of the tunnels such as submersible pumps, fixtures, conduit, etc. and will ensure employee safety and protect facilities in the tunnel during hoisting operations. The new hoistway will also provide a tie-off point where none currently exists.

Supplemental Information:

- Alternatives: Refurbish existing substandard structure. This option is not recommended as the existing structure is obsolete.
- Risk of No Action: If this project is not completed, hoisting operations at this tunnel will be greatly limited. A temporary structure will need to be installed utilizing a portable hoist that will greatly increase risk to employee safety and the installed facilities.
- Non-financial Benefits: Continued safe operation of the Tunnel.
- Summary of Financial Benefits (if applicable) and Costs: A catastrophic hoist failure could put employees using the equipment at risk. Lost time injuries cost upwards of $60,000 per event.
- Technical Evaluation/Analysis: New hoistway structure to be designed by an engineering consultant.
- Project Relationships (if applicable): N/A
- Basis for Estimate: The total capital cost of these projects is approximately $96,000 based on similar projects.

Total Funding Level ($000):

Historical Spend

Actual 2011	Actual 2012	Actual 2013	Actual 2014	Historic Year (O&M only)	Forecast 2015

Historical Elements of Expense

(Historical EOE breakout will only be completed for Steam projects/programs of $500 thousand or more and, for all other organizations, projects/programs of $1million or more.)

EOE	Actual 2011	Actual 2012	Actual 2013	Actual 2014	Historic Year (O&M only)	Forecast 2015
Labor						
M&S						
A/P						
Other						
Total						

Request ($000):

Request 2016	Request 2017	Request 2018	Request 2019	Request 2020
	$96			

Request by Elements of Expense

EOE	2016	2017	2018	2019	2020
Labor		$14			
M&S		$7			
A/P		$60			
Other		$6			
Overheads		$9			
Total		**$96**			

X	Capital
	O&M

2016-2020 – Gas Operations / Tunnel Maintenance

Project/Program Title	Flushing Tunnel - Hoistway
Project Manager	Victor Billinghurst
Hyperion Project Numbers	10106035
Organization's Project Numbers	N/A
Status of Projects	Not Started
Estimated Start Date	2017
Estimated Completion Date	2017
Work Plan Category	Strategic - Public and Employee Safety

Work Description:

Install new hoistway at Flushing Tunnel. Professional Engineer to design new hoist support structure and submit construction drawings. Remove and dispose of existing support structure. Fabricate and install new support structure including masonry footings, steel erection, and coating as per construction drawings.

Justification Summary:

New hoistway structure to be installed in order to replace existing substandard structure. The new structure will allow for an increased load capacity for hoisting material in and out of the tunnels such as submersible pumps, fixtures, conduit, etc. and will ensure employee safety and protect facilities in the tunnel during hoisting operations. The new hoistway will also provide a tie off point where none currently exists.

Supplemental Information:

- Alternatives: Refurbish existing substandard structure. This option is not recommended as it would be just as costly as installing new and superior support structures.
- Risk of No Action: If this project is not completed, hoisting operations at this tunnel will be greatly limited. A temporary structure will need to be installed utilizing a portable hoist that will greatly increase risk to employee safety and the installed facilities.
- Non-financial Benefits: Continued safe operation of the Tunnel.
- Summary of Financial Benefits (if applicable) and Costs: A catastrophic hoist failure could put employees using the equipment at risk. Lost time injuries cost upwards of $60,000 per event.
- Technical Evaluation/Analysis: New hoistway structure to be designed by an engineering consultant.
- Project Relationships (if applicable):N/A
- Basis for Estimate: The total capital cost of these projects is approximately $96,000 based on similar projects.

Total Funding Level ($000):

Historical Spend

Actual 2011	Actual 2012	Actual 2013	Actual 2014	Historic Year (O&M only)	Forecast 2015

Historical Elements of Expense

(Historical EOE breakout will only be completed for Steam projects/programs of $500 thousand or more and, for all other organizations, projects/programs of $1million or more.)

EOE	Actual 2011	Actual 2012	Actual 2013	Actual 2014	Historic Year (O&M only)	Forecast 2015
Labor						
M&S						
A/P						
Other						
Total						

Request ($000):

Request 2016	Request 2017	Request 2018	Request 2019	Request 2020
	$96			

Request by Elements of Expense

EOE	2016	2017	2018	2019	2020
Labor		$14			
M&S		$7			
A/P		$60			
Other		$6			
Overheads		$9			
Total		**$96**			

X	Capital
	O&M

2016-2020 – Gas Operations / Tunnel Maintenance

Project/Program Title	Ravenswood Tunnel - Hoistway
Project Manager	Victor Billinghurst
Hyperion Project Numbers	20956943
Organization's Project Numbers	N/A
Status of Projects	Projects not started
Estimated Start Date	2019
Estimated Completion Date	2019
Work Plan Category	Strategic - Public and Employee Safety

Work Description:

This project will install a new hoistway at Ravenswood Tunnel. A Professional Engineer will design a new hoist support structure and submit construction drawings, and the existing support structure will be removed and disposed of. The objective is to fabricate and install a new support structure, including masonry footings, steel erection, and coating as per construction drawings.

Justification Summary:

A new hoistway structure is to be installed in order to replace the existing substandard structure. The new structure will allow for an increased load capacity for hoisting material in and out of the tunnels such as submersible pumps, fixtures, conduit, etc. and will ensure employee safety and protect facilities in the tunnel during hoisting operations. The new hoistway will also provide a tie off point where none currently exist.

Supplemental Information:

- Alternatives: Refurbish existing substandard structure. This option is not recommended as the existing structure is obsolete.
- Risk of No Action: If this project is not completed, hoisting operations at this tunnel will be greatly limited. A temporary structure will need to be installed utilizing a portable hoist that will greatly increase risk to employee safety and the installed facilities.
- Non-financial Benefits: Continued safe operation of the Tunnel.
- Summary of Financial Benefits (if applicable) and Costs: A catastrophic hoist failure could put employees using the equipment at risk. Lost time injuries cost upwards of $60,000 per event.
- Technical Evaluation/Analysis: New hoistway structure to be designed by an engineering consultant.
- Project Relationships (if applicable): N/A

- Basis for Estimate: The total capital cost of these projects is approximately $100,000 based on similar projects.

Total Funding Level ($000):

Historical Spend

Actual 2011	Actual 2012	Actual 2013	Actual 2014	Historic Year (O&M only)	Forecast 2015

Historical Elements of Expense

(Historical EOE breakout will only be completed for Steam projects/programs of $500 thousand or more and, for all other organizations, projects/programs of $1million or more.)

EOE	Actual 2011	Actual 2012	Actual 2013	Actual 2014	Historic Year (O&M only)	Forecast 2015
Labor						
M&S						
A/P						
Other						
Total						

Request ($000):

Request 2016	Request 2017	Request 2018	Request 2019	Request 2020
			$100	

Request by Elements of Expense

EOE	2016	2017	2018	2019	2020
Labor				$10	
M&S				$22	
A/P				$56	
Other				$7	
Overheads				$5	
Total				**$100**	

X	Capital
	O&M

2016-2020 – Gas Operations / Tunnel Maintenance

Project/Program Title	Hudson Avenue Tunnel - Oil Minder
Project Manager	Victor Billinghurst
Hyperion Project Number	20956930
Organization's Project Number	N/A
Status of Project	Planning
Estimated Start Date	2019
Estimated Completion Date	2019
Work Plan Category	Strategic - System and Component Upgrades

Work Description:

The Hudson Avenue tunnel Water Vulnerability Assessment recommended improving components to provide additional safety measures to protect against a non-compliant State Pollutant Discharge Elimination System (SPDES) discharge. Influent of the sump consists mostly of groundwater. However, in the event of a leak or rupture of an electric feeder, its dielectric fluid will flow into the sump pit and be pumped into the oil water separator system. The system could potentially become overwhelmed before personnel could arrive onsite to take action. As an additional safety measure an Oil Minder will be installed in the sump. The Oil Minder contains sensors that rely on electrical conductivity and the lack of conductivity in a typical oil. This device will be connected to the pumps control panel and shut them down in the event an excessive volume of oil is detected and alert GOSS.

Justification Summary:

Improved components will allow for a more rapid detection of unusual circumstances which may be an indication of a problem.

Supplemental Information:

- Alternatives: Continue to rely on high oil alarm located in the oil water separator.
- Risk of No Action: Without an Oil Minder there is an increased risk of a non-compliant SPDES discharge.
- Non-financial Benefits: Increased safety, reliability, and efficiency.
- Summary of Financial Benefits (if applicable) and Costs: The capital cost to complete this project is estimated to be $35,000.
- Technical Evaluation/Analysis: The Water Vulnerability Assessment was performed by an engineering consultant. This recommendation was included in the final report.
- Project Relationships (if applicable): The installation of the flow meter (PR.20956922) and oil minder were both recommendations of the Water Vulnerability Assessment and will be completed in tandem.

- Basis for Estimate: The estimated cost is based on similar projects at other tunnel facilities.

Total Funding Level ($000):

Historical Spend

Actual 2011	Actual 2012	Actual 2013	Actual 2014	Historic Year (O&M only)	Forecast 2015

Historical Elements of Expense

(Historical EOE breakout will only be completed for Steam projects/programs of $500 thousand or more and, for all other organizations, projects/programs of $1million or more.)

EOE	Actual 2011	Actual 2012	Actual 2013	Actual 2014	Historic Year (O&M only)	Forecast 2015
Labor						
M&S						
A/P						
Other						
Total						

Request ($000):

Request 2016	Request 2017	Request 2018	Request 2019	Request 2020
			$35	

Request by Elements of Expense

EOE	2016	2017	2018	2019	2020
Labor				$15	
M&S				$9	
A/P				$3	
Other				$1	
Overheads				$7	
Total				**$35**	

X	Capital
	O&M

2016-2020 – Gas Operations / Tunnel Maintenance

Project/Program Title	Ravenswood Tunnel - Oil Minder
Project Manager	Victor Billinghurst
Hyperion Project Number	20956936
Organization's Project Number	N/A
Status of Project	Planning
Estimated Start Date	2019
Estimated Completion Date	2019
Work Plan Category	Strategic - System and Component Upgrades

Work Description:

The Ravenswood tunnel Water Vulnerability Assessment identified the need to improve components in order to provide additional safety measures to protect against a non-compliant State Pollutant Discharge Elimination System SPDES discharge. Influent of the sump consists mostly of groundwater. However, in the event of a leak or rupture of an electric feeder, its dielectric fluid will flow into the sump pit and be pumped into the oil water separator system. The system could potentially become overwhelmed before personnel could arrive onsite to take action. As an additional safety measure an Oil Minder will be installed in the sump. The Oil Minder contains sensors that rely on electrical conductivity and the lack of conductivity in a typical oil. This device will be connected to the pumps control panel and, in the event an excessive volume of oil is detected, shut them down and alert GOSS.

Justification Summary:

Improved components will allow for a more rapid detection of unusual circumstances which may be an indication of a problem.

Supplemental Information:

- Alternatives: Continue to rely on high oil alarm located in the oil water separator.
- Risk of No Action: Without an Oil Minder there is an increased risk of a non-compliant SPDES discharge.
- Non-financial Benefits: Increased safety, reliability, and efficiency.
- Summary of Financial Benefits (if applicable) and Costs: The capital cost to complete this project is estimated to be $35,000.
- Technical Evaluation/Analysis: The Water Vulnerability Assessment was performed by an engineering consultant. This recommendation was included in the final report.
- Project Relationships (if applicable): N/A
- Basis for Estimate: The estimated cost is based on similar projects at other tunnel facilities.

Total Funding Level ($000):

Historical Spend

Actual 2011	Actual 2012	Actual 2013	Actual 2014	Historic Year (O&M only)	Forecast 2015

Historical Elements of Expense

(Historical EOE breakout will only be completed for Steam projects/programs of $500 thousand or more and, for all other organizations, projects/programs of $1million or more.)

EOE	Actual 2011	Actual 2012	Actual 2013	Actual 2014	Historic Year (O&M only)	Forecast 2015
Labor						
M&S						
A/P						
Other						
Total						

Request ($000):

Request 2016	Request 2017	Request 2018	Request 2019	Request 2020
			$35	

Request by Elements of Expense

EOE	2016	2017	2018	2019	2020
Labor				$15	
M&S				$9	
A/P				$3	
Other				$1	
Overheads				$7	
Total				**$35**	

X	Capital
	O&M

2016-2020 – Gas Operations / Tunnel Maintenance

Project/Program Title	Various Tunnel Properties - Sump Pumps
Project Manager	Stephen Blom
Hyperion Project Number	21477247
Organization's Project Number	N/A
Status of Project	Ongoing program
Estimated Start Date	Ongoing program
Estimated Completion Date	Ongoing program
Work Plan Category	Strategic - System and Component Upgrades

Work Description:

Sump pumps are utilized to control water infiltration and protect the facilities and ancillary equipment contained within the tunnels. This is an annual program to purchase four new sump pumps each year to replace those that have reached the end of their useful life.

Justification Summary:

There are 18 sump pumps that service eight tunnels. Sump pumps are taken out of service and replaced every 12-18 months. When a sump pump can be refurbished it is sent to a vendor, but they frequently need to be retired. A reliable supply of replacement pumps for both scheduled and emergency replacement is essential to properly maintain the pumping capabilities of each tunnel. The sump pumps are essential for a number of reasons including keeping water away from our steam mains in Ravenswood, Hudson Avenue and First Avenue to prevent a catastrophic water hammer from occurring. A recent sump pump failure at the 11th Street Conduit resulted in a SPDES exceedance, when oil and grease were discharged to the Newtown Creek in excess of permit standards. Earlier this year two Bronx River Tunnel sump pumps failed simultaneously. Having two spare sump pumps on hand allowed us to call in a crew and change out both pumps before the infiltrating water could negatively impact the tunnel. During a preventative maintenance review for the Astoria Tunnel, it was evaluated that the cost to make repairs to sump pumps nearly exceeded the value of a brand new pump. Rather than make the repairs the pumps were retired and new sump pumps were purchased.

Supplemental Information:

- Alternatives: Semi-annual maintenance - The pumps are worked on and maintained by our maintenance vendor as the pumps are taken out of service. Yet there will eventually come a time when the pumps life expectancy is met and it needs to be replaced.

- Risk of No Action: Several unplanned pump failures could result in a shortage of suitable replacement pumps. The sump pumps are vital to ensuring the safety and reliability of the tunnel and the facilities contained within. Should a situation arise where there were no replacement pumps available it would be extremely difficult to locate a replacement pump on short notice. Following the above referenced Bronx River sump pump failure there were only two replacement pumps available in the United States.

- Non-financial Benefits: Increased safety, reliability, efficiency, and customer satisfaction.

- Summary of Financial Benefits (if applicable) and Costs: Sump pumps are generally refurbished one to two times. A general guideline is to not refurbish a pump if the cost exceeds one-half of its original purchase price.

- Technical Evaluation/Analysis: Sump pumps submitted to the vendor for maintenance are disassembled and evaluated for repair or retirement. Recommendations are made based on condition and cost. Technical Analysis of sump pump failures is performed on a case by case basis.

- Project Relationships (if applicable):N/A

- Basis for Estimate: Quotes are requested and estimates vary by pump type. Estimate is based on historical costs, pumps range in cost from $6,000 to $18,000.

Total Funding Level ($000):

Historical Spend

Actual 2011	Actual 2012	Actual 2013	Actual 2014	Historic Year (O&M only)
$75	$75	$75	$37	

Historical Elements of Expense

(Historical EOE breakout will only be completed for Steam projects/programs of $500 thousand or more and, for all other organizations, projects/programs of $1million or more.)

EOE	Actual 2011	Actual 2012	Actual 2013	Actual 2014	Historic Year (O&M only)	Forecast 2015
Labor						
M&S						
A/P						
Other						
Total						

Request ($000):

Request 2015	Request 2016	Request 2017	Request 2018	Request 2019	Request 2020
$75			$75		$75

Request by Elements of Expense

EOE	2015	2016	2017	2018	2019	2020
Labor	$1			$1		$1
M&S						
A/P	$67			$67		$67
Other	$6			$6		$6
Overheads	$1			$1		$1
Total	**$75**			**$75**		**$75**

X	Capital
	O&M

2016-2020 – Gas Operations / Tunnel Maintenance

Project/Program Title	Various Tunnel Properties - Upgrade Cable Radio Systems
Project Manager	Stephen Blom
Hyperion Project Number	20956940
Organization's Project Number	N/A
Status of Project	Planning
Estimated Start Date	2019
Estimated Completion Date	2019
Work Plan Category	Strategic - System and Component Upgrades

Work Description:

Replace the obsolete communication systems in the Ravenswood and 1st Avenue tunnels. Hire a communication vendor to design and install a reliable communication system.

Justification Summary:

The Leaky Cable radio systems are used for two-way communication when working in a tunnel. This system allows the crew working in the tunnel to communicate with the top person. The existing analog systems in these tunnels are unreliable, obsolete and currently operating in failure mode. If there is a loss of communication in the tunnel, work cannot proceed until communication is re-established.

Supplemental Information:

- Alternatives: Rely on Verizon copper line telephones located in the tunnel and elevator when the Leaky Cable system fails. This alternative is not recommended because the copper lines are also unreliable. The landlines are also located several hundred feet apart

- Risk of No Action: Failure of the communication system prevents all work from proceeding in the tunnel. This is problematic should a loss of communication occur during an emergency.

- Non-financial Benefits: Increased safety and reliability.

- Summary of Financial Benefits (if applicable) and Costs: The estimated cost to complete these projects is $926,000.

- Technical Evaluation/Analysis: A communication vendor will design and install a reliable communication system. The new system will be digital and allow for emergency responders such as the Police and Fire Departments to interchangeably use their radios on the Company system.

- Project Relationships (if applicable):

- Basis for Estimate: The estimate is an order of magnitude estimate and will be refined upon receiving the detailed engineering designs.

Total Funding Level ($000):

Historical Spend

Actual 2011	Actual 2012	Actual 2013	Actual 2014	Historic Year (O&M only)	Forecast 2015

Historical Elements of Expense

(Historical EOE breakout will only be completed for Steam projects/programs of $500 thousand or more and, for all other organizations, projects/programs of $1million or more.)

EOE	Actual 2011	Actual 2012	Actual 2013	Actual 2014	Historic Year (O&M only)	Forecast 2015
Labor						
M&S						
A/P						
Other						
Total						

Request ($000):

Request 2016	Request 2017	Request 2018	Request 2019	Request 2020
			$926	

Request by Elements of Expense

EOE	2016	2017	2018	2019	2020
Labor				$85	
M&S				$174	
A/P				$554	
Other				$63	
Overheads				$50	
Total				**$926**	

X	Capital
	O&M

2016-2020 – Gas Operations / Tunnel Maintenance

Project/Program Title	Various Tunnel Properties - Asphalt Paving
Project Manager	Victor Billinghurst
Hyperion Project Number	20956939
Organization's Project Number	N/A
Status of Project	Not started
Estimated Start Date	2019
Estimated Completion Date	2019
Work Plan Category	Strategic – Public and Employee Safety

Work Description:

Currently, the tunnel yards at 11th Street-Brooklyn, Ravenswood-Queens, Flushing-Queens, Astoria-both sides, Bronx River-Hunts Point side, have been covered in blue stone for at least the past ten years. The plan is to pave the majority of the walking surfaces with asphalt. At a minimum, this includes the parking area, a pathway to the head house, oil water separators, air winches and areas where material is stored so a hand truck, cart, or lifting device can be utilized.

Justification Summary:

The uneven walking surface creates a slip/trip/fall hazard and makes it difficult to move material around the yard. During the winter a paved path can be shoveled and/or treated.

Supplemental Information:

- Alternatives: Leave the yards as they are and deal with the difficulties.
- Risk of No Action: An employee could lose traction, slip and fall resulting in a recordable injury.
- Non-financial Benefits: Increased safety and environmental benefits.
- Summary of Financial Benefits (if applicable) and Costs: N/A
- Technical Evaluation/Analysis: N/A
- Project Relationships (if applicable): N/A
- Basis for Estimate: Using current paving contracts and estimated square footage the paving is estimated to be $81,000

Total Funding Level ($000):

Historical Spend

Actual 2011	Actual 2012	Actual 2013	Actual 2014	Historic Year (O&M only)	Forecast 2015

Historical Elements of Expense

(Historical EOE breakout will only be completed for Steam projects/programs of $500 thousand or more and, for all other organizations, projects/programs of $1million or more.)

EOE	Actual 2011	Actual 2012	Actual 2013	Actual 2014	Historic Year (O&M only)	Forecast 2015
Labor						
M&S						
A/P						
Other						
Total						

Request ($000):

Request 2016	Request 2017	Request 2018	Request 2019	Request 2020
			$81	

Request by Elements of Expense

EOE	2016	2017	2018	2019	2020
Labor				$11	
M&S				$5	
A/P				$53	
Other				$5	
Overheads				$7	
Total				**$81**	

X	Capital
	O&M

2016-2020 – Gas Operations / Tunnel Maintenance

Project/Program Title	First Ave. Tunnel - Flash Tank Replacement
Project Manager	Victor Billinghurst
Hyperion Project Number	10106036
Organization's Project Number	N/A
Status of Project	Not started
Estimated Start Date	2019
Estimated Completion Date	2019
Work Plan Category	Strategic- System and Component Upgrades

Work Description:

Remove and replace the undersized existing flash tank within the First Avenue Tunnel. This project includes an engineering evaluation of the current system to determine the appropriate sized flash tank to eliminate the current steam vapor condition.

Justification Summary:

The existing flash tank, a vessel that allows flash steam and high temperature condensate to cool before it is discharged to the sump, is not working efficiently during a steam main turn-on, creating an extreme vapor condition in the tunnel. Based on system conditions there is also the potential for an extreme vapor condition on the corner of the First Avenue and E. 36th Street, a pedestrian sidewalk.

Supplemental Information:

- Alternatives: Continue to rely on the undersized flash tank.
- Risk of No Action: Extreme vapor conditions continue within the tunnel during the turn-ons, putting employees at risk for an injury and continued inconvenience of the general public with escaping steam vapors from the tunnel.
- Non-financial Benefits: Increased safety, reliability, efficiency, and customer satisfaction.
- Summary of Financial Benefits (if applicable) and Costs: The cost is estimated to be $500,000 including the engineering and design.
- Technical Evaluation/Analysis: To be designed with input from Steam Engineering.
- Project Relationships (if applicable): N/A
- Basis for Estimate: Current estimate is based off of an order of magnitude estimate, but the estimate will be refined based on the detailed engineering design.

Total Funding Level ($000):

Historical Spend

Actual 2011	Actual 2012	Actual 2013	Actual 2014	Historic Year (O&M only)	Forecast 2015

Historical Elements of Expense

(Historical EOE breakout will only be completed for Steam projects/programs of $500 thousand or more and, for all other organizations, projects/programs of $1million or more.)

EOE	Actual 2011	Actual 2012	Actual 2013	Actual 2014	Historic Year (O&M only)	Forecast 2015
Labor						
M&S						
A/P						
Other						
Total						

Request ($000):

Request 2016	Request 2017	Request 2018	Request 2019	Request 2020
			$500	

Request by Elements of Expense

EOE	2016	2017	2018	2019	2020
Labor				$130	
M&S				$109	
A/P				$172	
Other				$24	
Overheads				$65	
Total				**$500**	

X	Capital
	O&M

2016-2020 – Gas Operations / Tunnel Maintenance

Project/Program Title	Hudson Avenue Tunnel - Flow Meter
Project Manager	Victor Billinghurst
Hyperion Project Number	20956922
Organization's Project Number	N/A
Status of Project	Planning
Estimated Start Date	2019
Estimated Completion Date	2019
Work Plan Category	Strategic - System and Component Upgrades

Work Description:

The Hudson Avenue tunnel Water Vulnerability Assessment identified that the sump pits and pumps are adequate insofar as serving the needs of the facility. The study recommended improving components. Specifically, installing flow meters and hours meters along the pump discharge lines as a means of better monitoring overall pump operations. Not only will this allow us to establish with certainty the actual flow rate during both one and two pump operation, but it would allow for verification that both pumps are alternating between lead and lag positions and undergoing wear and tear at an equal rate. Monitoring this system will allow for a more rapid detection of unusual circumstances which may be an indication of a problem.

Justification Summary:

Improved components will allow for a more rapid detection of unusual circumstances which may be an indication of a problem.

Supplemental Information:

- Alternatives: Continue to estimate flow rate.
- Risk of No Action: With no flow meter it will take longer to identify abnormal pumping conditions such as longer run cycles, which could be an indication of increased water infiltration.
- Non-financial Benefits: Increased safety, reliability, and efficiency.
- Summary of Financial Benefits (if applicable) and Costs: The capital cost to complete this project is estimated to be $65,000.
- Technical Evaluation/Analysis: The Water Vulnerability Assessment was performed by an engineering consultant. This recommendation was included in the final report.
- Project Relationships (if applicable): The installation of the flow meter and an oil minder (PR.20956930) were both recommendations of the Water Vulnerability Assessment and will be completed in tandem.

- Basis for Estimate: The estimated cost is based on similar projects at other tunnel facilities.

Total Funding Level ($000):

Historical Spend

Actual 2011	Actual 2012	Actual 2013	Actual 2014	Historic Year (O&M only)	Forecast 2015

Historical Elements of Expense

(Historical EOE breakout will only be completed for Steam projects/programs of $500 thousand or more and, for all other organizations, projects/programs of $1million or more.)

EOE	Actual 2011	Actual 2012	Actual 2013	Actual 2014	Historic Year (O&M only)	Forecast 2015
Labor						
M&S						
A/P						
Other						
Total						

Request ($000):

Request 2016	Request 2017	Request 2018	Request 2019	Request 2020
			$65	

Request by Elements of Expense

EOE	2016	2017	2018	2019	2020
Labor				$28	
M&S				$16	
A/P				$5	
Other				$2	
Overheads				$14	
Total				**$65**	

METERS:

X	Capital
	O&M

2016 – Gas Operations

Project/Program Title	Meter Purchases - New Business and Program Replacements
Project Manager	Greg Ludwig
Hyperion Project Number	21477251
Organization's Project Number	N/A
Status of Project	Ongoing Program
Estimated Start Date	Ongoing
Estimated Completion Date	Ongoing
Work Plan Category	Regulatory Mandated – New Business Connections

Work Description:

This capital program is for the purchase of gas meters and related devices for mandated programs. Related devices include pressure regulators, and instrumentation such as volume correctors and interruptible monitors. These mandated programs include program replacements and new business meter purchases. This is mandatory work in accordance with NYS PSC standards set forth in Title 16, Part 226, and the Gas Tariff.

This program involves the purchase new business gas meters and related devices (service regulators, interruptible monitors, and volume correctors) in accordance with NYS PSC standards set forth in Title 16 and Gas Tariff. This work is mandatory.

Justification Summary:
Gas meters are used for new business, meter programs, and replacements. Approximately 87% of the meter inventory is maintained through new meter purchases and the remainder from refurbished meters.

NEW BUSINESS METER PURCHASES:
Meters need to be purchased for new business to meet NYS PSC requirements in Title 16 and Gas Tariff.

This program includes the purchase of the following:

Large Commercial and Industrial Metering Equipment (above 1,000 cfh)
Meters required to fulfill traditional new business installations:
- rotary meters
- turbine meters
- volume correctors
- interruptible monitors
- large commercial/industrial regulator sets
- Gas Measurement field labor

Diaphragm Meters (1000cfh and below)
Meters required to fulfill traditional new business installations:
- Class 250 residential diaphragm meters
- Class 500 residential/commercial diaphragm meters

- Class 1,000 commercial diaphragm meters

Pressure Regulation Devices
Pressure regulating equipment for traditional new business installations:
- residential 1in X 1in regulators
- commercial 1in X 1.25in regulators
- commercial 2in X 2in regulators

Gas Measurement Support
For metering products and services used to improve operating efficiency including electronic correctors, outsource vendor meter refurbishment, and capitalized labor.
- volume correctors
- outsource vendor meter refurbishment
- Gas Measurement Shop capital labor
- in-directs

PROGRAM REPLACEMENT METER PURCHASES:
Gas meters and related devices shall conform to the accuracy standards set forth in NYS PSC Title 16, Part 226. Meters that fail to meet these standards are removed and either retired or refurbished.

This program replacement meter purchases include the following:

- Meter Programs
  Replacement meters for sampling programs and remediation/retirement programs:
  - Cat. A/C/O AIP sampling programs
  - Cat. A/C/O remediation/retirement programs
  - Overdue Cat A/C/O remediation programs

- Large Commercial and Industrial Metering Equipment (1,000 cfh and above)
  Large meters required for trouble removals and removals/replacements:
  - rotary meters
  - turbine meters

- Diaphragm Meters (1,000 cfh and below)
  Diaphragm meters required for trouble removals and replacements:
  - class 250 meters
  - class 500 meters
  - class 1000 meters

- Pressure Regulation Devices
  Pressure regulating equipment required for troubles removals and replacements:
  - residential 1in X 1in regulators
  - commercial 1in X 1.25in regulators
  - commercial 2in X 2in regulators
  - industrial regulators

- Measurement Support
  For metering products and services including:
  - volume correctors required for trouble removals and replacements
  - outsource vendor meter refurbishment

- Meter Shop capital labor
- in-directs

Supplemental Information:

- Alternatives: There are no alternatives. Con Edison is responsible for providing new business gas meters in accordance with Title 16 and Gas Tariff. Meters are essential for recording customer gas usage, which is the basis for billing the customer.

- Risk of No Action: We will be in violation of the gas tariffs and we will be losing potential revenue. If gas meters were not purchased then we could only bill the customer on estimated instead of actual gas usage.

- Non-financial Benefits: N/A

- Summary of Financial Benefits (if applicable) and Costs: For new business that requires a new meter purchases, these customers will add additional revenue.

- Technical Evaluation/Analysis: Includes purchase of customer meters (diaphragm, rotary, turbine), service regulators (residential/commercial/industrial), and metering products/services (interruptible monitors, volume correctors, outsourced meter shop services) for traditional new business.

- Project Relationships (if applicable): N/A

- Basis for Estimate: Historical baseline with projected program replacement and new business meters.

Total Funding Level ($000):

Historical Spend

Actual 2011	Actual 2012	Actual 2013	Actual 2014	Historic Year (O&M only)	Forecast 2015
$5,655	$6,356	$9,232	$7,897	N/A	$9,268

Historical Elements of Expense

(Historical EOE breakout will only be completed for Steam projects/programs of $500 thousand or more and, for all other organizations, projects/programs of $1million or more.)

EOE	**Actual 2011**	**Actual 2012**	**Actual 2013**	**Actual 2014**	**Historic Year** (O&M only)	**Forecast 2015**
Labor	$991	$680	$694	$740	N/A	
M&S		$3,939	$7,588	$6,262	N/A	
A/P	$3,585	$3,402	$4	$49	N/A	
Other	$1,079	-$1,665	$946	$846	N/A	
Total	**$5,655**	**$6,356**	**$9,232**	**$7,897**	**N/A**	

Request ($000):

Request 2016	**Request 2017**	**Request 2018**	**Request 2019**	**Request 2020**
$9,594	$9,576	$9,521	$9,599	$9,888

Request by Elements of Expense

EOE	**2016**	**2017**	**2018**	**2019**	**2020**
Labor	$768	$766	$762	$768	$791
M&S	$0	$0	$0	$0	$0
A/P	$7,536	$7,565	$7,554	$7,682	$7,946
Other	$669	$672	$671	$682	$705
Overheads	$621	$573	$534	$467	$446
Total	**$9,594**	**$9,576**	**$9,521**	**$9,599**	**$9,888**

X	Capital
	O&M

2016 – Gas Operations

Project/Program Title	Meter Purchases - #4/6 Oil-to-Gas
Project Manager	Greg Ludwig
Hyperion Project Number	1GD1200
Organization's Project Number	N/A
Status of Project	Ongoing Program
Estimated Start Date	Ongoing
Estimated Completion Date	Ongoing
Work Plan Category	Regulatory Mandated – New Business Connections

Work Description:

Purchase of commercial/industrial gas meters (rotary, turbine), gas service regulators and meter accessories (volume correctors, interruptible monitors) resulting from the NYC Clean Air Initiative. This is a mandatory project requiring the purchase of approximately 1,250 meters.

Justification Summary:

Meters, regulators, and meter accessories are used for new business resulting from recent legislation in NYC requiring the conversion of #4 and #6 oil supplied boilers from fuel oil to natural gas.

Supplemental Information:

- Alternatives: There are no alternatives. Meters are essential for recording customer gas usage, which is the basis for billing the customer. Without meters, we will be in violation of the Tariffs.

- Risk of No Action: If gas meters are not installed then we could only bill the customers on estimated instead of actual usage.

- Non-financial Benefits: The addition of new gas customers or customers who are using oil heat and are converting to gas heat has a direct impact on our Sustainability Strategy to pursue additional oil-to-gas conversions. This program will provide additional customer satisfaction.

- Summary of Financial Benefits (if applicable) and Costs: The new service installations, which require new meter purchases, will add additional revenue.

- Technical Evaluation/Analysis: Includes purchase of customer meters (rotary, turbine), service regulators (commercial/industrial), and metering products/services (interruptible monitors, volume correctors) for 4 & 6 oil to gas conversions.

- Project Relationships (if applicable): This project supports the expected growth attributed to #4/#6 oil-to-gas conversions. This program only applied for those SIR's received after the law was passed. Under the present Rate Case Agreement, expenditures and revenues associated with #4/#6 oil-to-gas conversions where the SIR was received after the date the law was passed, will be deferred eligible for reconciliation at the end of the present rate agreement.

- Basis for Estimate: Historical baseline with projected 4 & 6 oil to gas conversions.

Total Funding Level ($000):

Historical Spend

Actual 2011	Actual 2012	Actual 2013	Actual 2014	Historic Year (O&M only)	Forecast 2015
				N/A	

Historical Elements of Expense

(Historical EOE breakout will only be completed for Steam projects/programs of $500 thousand or more and, for all other organizations, projects/programs of $1million or more.)

EOE	Actual 2011	Actual 2012	Actual 2013	Actual 2014	Historic Year (O&M only)	Forecast 2015
Labor					N/A	
M&S					N/A	
A/P					N/A	
Other					N/A	
Total					**N/A**	

Request ($000):

Request 2016	Request 2017	Request 2018	Request 2019	Request 2020
2,500	2,100	1,800	1,500	1,200

Request by Elements of Expense

EOE	2016	2017	2018	2019	2020
Labor	196	168	144	120	96
M&S					
A/P	1,970	1,659	1,428	1,200	964
Other	175	147	127	107	86
Overheads	159	126	101	73	54
Total	**2,500**	**2,100**	**1,800**	**1,500**	**1,200**

X	Capital
	O&M

2016 – Gas Operations

Project/Program Title	Meter Installations – New Business and Program Replacements
Project Manager	Various
Hyperion Project Number	7GD9601, 7GD9661, 7GD9901, 7GD9961
Organization's Project Number	N/A
Status of Project	Ongoing Program
Estimated Start Date	Ongoing
Estimated Completion Date	Ongoing
Work Plan Category	Regulatory Mandated

Work Description:

This program is for the installation of: gas meters for mandated meter programs, meter/regulator/ instrumentation for troubles and replacements, and new business meter installations. This is mandatory work in accordance with NYS PSC standards set forth in Title 16, Part 226 and Gas Tariff.

Justification Summary:

Gas meters and related devices shall conform to the accuracy standards set forth in NYS PSC Title 16, Part 226. Meters that fail to meet these standards are removed and either retired or refurbished.

Meter installations for program replacements under regulatory mandated programs include the following:

- Meter Programs
  Replacement meters for sampling programs and remediation/retirement programs:
  - Cat. A/C/O AIP sampling programs
  - Cat. A/C/O remediation/retirement programs
  - Overdue Cat A/C/O remediation programs

- Large Commercial and Industrial Metering Equipment (1,000 cfh and above)
  Large meters required for trouble removals and removals/replacements:
  - rotary meters
  - turbine meters

- Diaphragm Meters (1,000 cfh and below)
  Diaphragm meters required for trouble removals and replacements:
  - class 250 meters
  - class 500 meters
  - class 1000 meters

- Pressure Regulation Devices
  Pressure regulating equipment required for troubles removals and replacements:
  - residential 1in X 1in regulators
  - commercial 1in X 1.25in regulators
  - commercial 2in X 2in regulators

- industrial regulators

- Measurement Support
  Volume correctors required for trouble removals and replacements

Supplemental Information:

- Alternatives: There are no alternatives. Con Edison is responsible for providing gas meters and associated equipment/devices for programs and replacements in accordance with Title 16, and Part 226. For new business, gas meters must be installed when customer's request service in accordance with the Gas Tariff. Meters must be installed to bill the customer.

- Risk of No Action: Con Edison will be in violation of the gas tariffs and will be losing potential revenue. If meter program and replacement gas meters were not installed then we could only bill the customer on estimated instead of actual gas usage.

- Non-financial Benefits: None

- Summary of Financial Benefits (if applicable) and Costs: None

- Technical Evaluation/Analysis: Includes installation of customer meters (diaphragm, rotary, turbine), service regulators (residential/commercial/industrial), and metering products (interruptible monitors, volume correctors) for programs and replacements. Includes installation/turn-on of customer meters (diaphragm, rotary, turbine), and service regulators (residential/commercial/industrial) for traditional new business.

- Project Relationships (if applicable): N/A

- Basis for Estimate: Historical baseline with projected program, replacement, and new business meter installations.

Total Funding Level ($000):

Historical Spend

Actual 2011	Actual 2012	Actual 2013	Actual 2014	Historic Year (O&M only)	Forecast 2015
$14,043	$13,915	$18,056	$13,976	N/A	$17,589

Historical Elements of Expense

(Historical EOE breakout will only be completed for Steam projects/programs of $500 thousand or more and, for all other organizations, projects/programs of $1million or more.)

EOE	Actual 2011	Actual 2012	Actual 2013	Actual 2014	Historic Year (O&M only)	Forecast 2015
Labor	$5,810	$4,732	$6,429	$5,216	N/A	
M&S	$97	$987	$2,600	$1,869	N/A	
A/P	$2,743	$3,188	$1,648	$2,224	N/A	
Other	$5,393	$5,008	$7,379	$4,667	N/A	
Total	**$14,043**	**$13,915**	**$18,056**	**$13,976**	**N/A**	

Request ($000):

Request 2016	Request 2017	Request 2018	Request 2019	Request 2020
$16,436	$16,378	$16,481	$16,495	$16,505

Request by Elements of Expense

EOE	2016	2017	2018	2019	2020
Labor	$5,678	$5,814	$5,997	$6,267	$5,527
M&S	$2,468	$2,849	$2,827	$2,874	$2,767
A/P	$1,382	$1,017	$1,013	$1,152	$2,497
Other	$383	$380	$379	$395	$507
Overheads	$6,525	$6,318	$6,265	$5,807	$5,207
Total	**$16,436**	**$16,378**	**$16,481**	**$16,495**	**$16,505**

X	Capital
	O&M

2016 – Gas Operations

Project/Program Title	Meter Installations - #4/6 Oil-to-Gas
Project Manager	Various
Hyperion Project Number	1GD9611 ,1GD9671, 1GD9911
Organization's Project Number	N/A
Status of Project	Ongoing Program
Estimated Start Date	Ongoing
Estimated Completion Date	Ongoing
Work Plan Category	Regulatory Mandated – New Business Connections

Work Description:

Installation of commercial/industrial gas meters (rotary, turbine), gas service regulators and meter accessories (volume correctors, interruptible monitors) resulting from the NYC Clean Air Initiative. This is a mandatory project installing approximately 1,250 meters.

Justification Summary:

Meters, regulators, and meter accessories are used for new business resulting from recent legislation in NYC requiring the conversion of #4 and #6 oil supplied boilers from fuel oil to natural gas.

Supplemental Information:

- Alternatives: There are no alternatives. Meters are essential for recording customer gas usage, which is the basis for billing the customer. Without meters, we will be in violation of the Tariffs.

- Risk of No Action: If gas meters are not installed then we could only bill the customers on estimated instead of actual usage.

- Non-financial Benefits: The addition of new gas customers or customers who are using oil heat and are converting to gas heat has a direct impact on our Sustainability Strategy to pursue additional oil-to-gas conversions. This program will provide additional customer satisfaction.

- Summary of Financial Benefits (if applicable) and Costs: The new service installations, which require new meter installations, will add additional revenue.

- Technical Evaluation/Analysis: Includes installation of customer meters (rotary, turbine), service regulators (commercial/industrial), and metering products/services (interruptible monitors, volume correctors) for 4 & 6 oil to gas conversions.

- Project Relationships (if applicable): This project supports the expected growth attributed to #4/#6 oil-to-gas conversions. This program only applied for those SIR's received after the law was passed. Under the present Rate Case Agreement, expenditures and revenues associated with #4/#6 oil-to-gas conversions where the SIR was received after the date the law was passed, will be deferred eligible for reconciliation at the end of the present rate agreement.

- Basis for Estimate: Historical baseline with projected 4 & 6 oil to gas conversions.

- **Total Funding Level ($000):**

Historical Spend

Actual 2011	Actual 2012	Actual 2013	Actual 2014	Historic Year (O&M only)	Forecast 2015
	127	1490	2317	N/A	

Historical Elements of Expense

(Historical EOE breakout will only be completed for Steam projects/programs of $500 thousand or more and, for all other organizations, projects/programs of $1million or more.)

EOE	Actual 2011	Actual 2012	Actual 2013	Actual 2014	Historic Year (O&M only)	Forecast 2015
Labor		65	846	1428	N/A	
M&S		5	746	642	N/A	
A/P		10	70	347	N/A	
Other		47	-172	-100	N/A	
Total		**127**	**1490**	**2317**	**N/A**	

Request ($000):

Request 2016	Request 2017	Request 2018	Request 2019	Request 2020
1,552	853	741	590	462

Request by Elements of Expense

EOE	2016	2017	2018	2019	2020
Labor	559	307	268	212	166
M&S	234	129	113	90	70
A/P	219	138	132	126	106
Other	39	23	21	18	15
Overheads	501	256	207	144	105
Total	**1,552**	**853**	**741**	**590**	**462**

PICARRO LEAK DETECTION EQUIPMENT:

X	Capital
	O&M

2017 – Gas Operations/Technical Operations

Project/Program Title	Picarro Leak Detection Equipment
Project Manager	Alan Boyd
Project Number	21727984
Organization's Project Number	N/A
Status of Project	Planning
Estimated Start Date	January 2017
Estimated Completion Date	December 2017
Work Plan Category	Strategic

Work Description:

The Picarro Surveyor system is a state of the art mobile methane leak detection technology. The detection equipment utilizes Cavity Ring Down Spectroscopy (CRDS), which due to its sensitivity and the use of propriety algorithms incorporating weather data, allows the system to detect methane leaks much farther from the source when compared to traditional leak survey equipment.

In 2016, the Leak Survey section of Technical Operations will work with Con Edison's Research and Development group to test and deploy the Picarro technology in targeted areas with the goal of creating a standard for its continued use. Testing the technology first before advancing deployment will provide an opportunity to gain experience with the new technology, understand its capabilities to identify leaks on our infrastructure and understand the impact to operations.

Starting in 2017, the Picarro technology will be purchased by the Company. Based on the experience gained in 2016, its continued use will be determined which would include focusing on leak prone pipe that is targeted for main replacement. The Picarro equipment will not replace the existing leak detection equipment but will supplement it. Initially we anticipate the technology will be used to survey areas where we will be performing geographic bundling of leak prone main replacement, areas that require special surveys (events, parade routes, etc.), and to pinpoint difficult to find leaks.

Justification Summary:

The Picarro methane detection equipment is installed within a vehicle and is used to detect potential natural gas leaks on gas mains and services while the vehicle traverses the designated service area. Utilizing this new technology will improve public and employee safety by identifying potential leaks and graphically displaying areas to be investigated. These areas would then be repaired through traditional repair methods. By utilizing the technology to perform surveys in areas where geographic bundling of main replacement has been performed, we can ensure all leaks present at the time have been addressed before construction resources relocate. This post maintenance approach will help mitigate safety concerns associated with leaks and will also improve the customer experience as it will help to maximize the construction resources in the area while minimizing the potential for returning to the same area to make additional repairs. Con Edison

has an extensive Enterprise Risk Management (ERM) program. From an ERM perspective, events on the gas distribution system stemming from damage or leaks present a significant risk. The use of the Picarro technology will help reduce this risk.

Supplemental Information:

- Alternatives: Alternatively, we could investigate other emerging leak detection systems, however, Picarro is currently the most mature of these emerging technologies.

- Risk of No Action: If we don't do this, we will not be able to determine if Picarro is an appropriate leak finding tool that will be beneficial to the Company in the future.

- Non-financial Benefits: The state of the art technology would improve public safety and put the Company at the forefront of detecting leaks.

- Summary of Financial Benefits (if applicable) and Costs: N/A

- Technical Evaluation/Analysis: The Picarro Surveyor leak detection system is the current state of the art in leak detection technology that utilizes Cavity Ring Down Spectroscopy (CRDS) to reliably identify the presence of hydrocarbons. The Surveyor then takes the hydrocarbon readings and using a proprietary algorithm that incorporates weather data from on-board weather instrumentation as well as GPS locating equipment, creates Leak Indication Search Areas (LISAs). The indication of LISAs vastly enhances the leak investigation process by acknowledging the presence of a hydrocarbon and also graphically displaying the area where a subsequent detailed leak investigation should be performed. Current leak indication technology is a simple acknowledgement that the inlet to the instrument has measured a hydrocarbon. In 2015 Con Edison performed double blind testing of the Picarro technology against the current Leak Survey methane detection processes. Results from this testing indicate an increased detection capability utilizing Picarro.

- Project Relationships (if applicable): N/A

- Basis for Estimate: The $1,200,000 estimate is based on the cost to purchase and install the technology in one vehicle.

Total Funding Level ($000):

Historical Spend

Actual 2011	**Actual 2012**	**Actual 2013**	**Actual 2014**	**Historic Year** (O&M only)	**Forecast 2015**

Historical Elements of Expense

(Historical EOE breakout will only be completed for Steam projects/programs of $500 thousand or more and, for all other organizations, projects/programs of $1 million or more.)

EOE	Actual 2011	Actual 2012	Actual 2013	Actual 2014	Historic Year (O&M only)	Forecast 2015
Labor						
M&S						
A/P						
Other						
Total						

Request ($000):

Request 2016	Request 2017	Request 2018	Request 2019	Request 2020
	$1,200			

Request by Elements of Expense

EOE	2016	2017	2018	2019	2020
Labor		$48			
M&S		$182			
A/P		$724			
Other		$79			
Overheads		$167			
Total		**$1,200**			

6. GAS WORK AND ASSET MANAGEMENT SYSTEM

X	Capital
	O&M

2016 – Gas Operations / IT Projects

Project/Program Title	Gas Work and Asset Management System
Project Manager	Sarrina Banks
Hyperion Project Number	10106065
Organization's Project Number	N/A
Status of Project	Planning
Estimated Start Date	January 2017
Estimated Completion Date	Dec 31 2020
Work Plan Category	Strategic

Work Description:

Gas Operations identified the need for an integrated work and asset management system to optimize its ability to plan and manage all types of work. A Gas Work Management Roadmap project team was established to examine and develop the justification and implementation plan (Roadmap assessment) for an investment in developing standardized work and asset management business processes for CECONY Gas Operations.

Leveraging the results and recommendations within the Roadmap assessment, the project team will select and deploy an integrated Work and Asset Management Solution for Gas Operations that will allow for standardization of work processes, better work scheduling and prioritization, as well as provide a single repository for all work and asset data related to Con Edison's gas facilities.

This project will also yield strategic benefits that support both corporate and Gas Operations' goals and objectives. Some examples are: an integrated view of financial and operational data resulting in more effective risk mitigation strategies, increased transparency, more effective trending and analysis, improved operational efficiencies, and an enhanced customer experience through more accurate and timely information around work flow and job status. In addition, while the business has always operated within a stringent regulatory environment, the advent (and ongoing) implementation of stricter integrity management regulations has given rise to a new set of requirements that the existing operating model, supporting systems and processes will be challenged to maintain.

High-level schedule: The implementation of the Work Management solution has an approximate length of four years. The Gas Roadmap project team is proposing a phased approach for implementing the integrated Work and Asset Management Solution as well as related processes and organizational changes.

Justification Summary:

Recent changes relating to technology, the economy, and both environmental and governmental policy present a new set of challenges for Gas Operations. Critical to meeting these challenges in both the short and long-term is Gas Operations' ability to plan and effectively manage its work and asset information in an integrated manner. Doing so would result in increased safety and integrity of the Gas Network (Transmission and Distribution), and provide customers with natural gas in a safe and efficient manner.

At present, approximately 67 disparate applications support the core work and asset management processes. While some of these applications remain operable, they are not upgradeable, and are approaching obsolescence. These applications are also unable to provide the level of real time visibility between departments, nor are they integrated in the manner required to effectively manage all aspects of work in Gas Operations. Moreover, the current state applications do not contain any unique identifiers that might be leveraged to help facilitate communications between systems and throughout the asset lifecycle. Hence, the Gas Operations' workforce must interact with a number of different sections and multiple applications to support forecasting, work planning, work scheduling, assigning and dispatching of work, work execution, work closure, and emergency response and follow-up.

Over the past several months as part of its continuous process improvement initiatives, Gas Operations has recommended the implementation of a comprehensive Work and Asset Management solution as outlined in its strategic technology Roadmap assessment.

The implementation of the recommendations from the Roadmap assessment establishes a single repository for all work and asset related data to facilitate improved regulatory compliance, operational efficiencies, and financial insights. All assets will be managed in an integrated platform to more effectively manage, and coordinate all construction, operations, and maintenance activities. Users will no longer need to access multiple systems to gain granular optics of underlying assets in order to perform their work.

Moreover, all work requirements and tasks will be mapped to worker's knowledge, skills, and abilities (i.e. operator qualifications). This approach would provide an integrated view of the financial and operational data allowing for increased visibility into materials management, job costing, resource availability, and operational productivity resulting in an increase of the overall safety and integrity of the gas network.

Supplemental Information:

- Alternatives: Continue to maintain and operate existing legacy systems and enhance where possible given that many applications are not upgradeable or no longer supported by the vendors. This alternative would not provide the same level of functionality and efficiency as the proposed solution, thereby limiting CECONY Gas Operations' ability to manage its work and resources in the manner necessary to meet growing business needs and changing regulatory compliance requirements.

- Risk of No Action: Without the combination of standardized processes and integrated information technology solution, Gas Operations would be in an inferior position to meet future operational and regulatory challenges and complexities. Moreover, Gas Operations would continue to manage our assets in a labor intensive fashion which will present significant challenges with increases in the work and resources that will need to be managed.

- Non-financial Benefits: The adoption of best practice work management processes and information systems will facilitate improved cost tracking, work scheduling, status reporting and productivity analysis. Maintaining a reliable distribution and transmission system will more effectively mitigate emergent risks and threats by ensuring inspection and maintenance programs are followed. In addition, employees' time can be devoted to business analysis, correlations analysis, cause and effect of business processes rather than gathering data from multiple systems.

- Summary of Financial Benefits (if applicable) and Costs: Gas Operations is in the nascent stages of planning for the Work and Asset Management Solution implementation with a plan to initiate the foundational initiatives that have been identified and defined based on specifics around the Gas

Operations current state systems, processes, data gathering and quality as well as procedural standards. The total annual benefit which will be realized upon full implementation is to be determined. Annual financial benefits will be identified as cost savings from efficiency and productivity gains in process and technology improvements, and more importantly, risk avoidance.

- Technical Evaluation/Analysis: The 67 different applications currently being utilized throughout Gas Operations were reviewed. Some of these applications include: the Customer Information System (CIS), Computer Aided Dispatching (CAD), Emergency Control System (ECS), Gas Inspection System (GIS), Gas Operations Payroll System (GOPS), Avail (a Vehicle GPS tracking application), as well as work managed in MS Access and Excel files.

    - The Roadmap Team confirmed that the work management capabilities along with process changes and adaptation of best practices/standards would yield various benefits. Examples of applications to be retired with the implementation of a new Work and Asset Management solution in Gas include:
        - GIS
        - ECS
        - GOPS
        - Mainsaver – DOS based not supported by vendor
        - Gas Control Communications Outage Tracking System (COTS)
        - Measurement – Meter Recording Instruments Access Database
        - Leak Survey, Corrosion, and Pressure control Access Databases

- Project Relationships (if applicable): N/A

- Basis for Estimate: A team working with an external systems integrator conducted an analysis of current asset information capture and work management solutions to define an integrated solution and implementation plan to support Gas Operations business processes in the areas of asset traceability and work management. The estimate includes product licenses, hardware, integration to other systems and implementation resources.

Total Funding Level ($000):

Historical Spend

Actual 2010	Actual 2011	Actual 2012	Historic Year (O&M only)	Actual 2013	Actual 2014

Request ($000):

Budget 2015	Request 2016	Request 2017	Request 2018	Request 2019	Request 2020

	$3,952	$21,928	$27,149	$32,714	$25,005

Request by Elements of Expense

EOE	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**
Labor		$256	$853	$1,012	$1,178	$1,000
M&S		$389	$3,239	$3,844	$1,597	$1,356
A/P		$2,414	$13,210	$15,786	$21,528	$18,371
Other		$245	$1,438	$1,716	$2,042	$1,742
Overheads		$648	$3,188	$4,791	$6,369	$2,536
Total		**$3,952**	**$21,928**	**$27,149**	**$32,714**	**$25,005**

CONSOLIDATED EDISON COMPANY OF NEW YORK, INC. 2017-2019 OPERATIONS AND MAINTENANCE (O&M)

GAS OPERATIONS – O&M INCREASES BY CATEGORY	Total Dollars ($000)*		
	RY1	RY2	RY3
Service Line Definition	**$ 11,000**	**$ 11,000**	**$ 11,000**
Maintenance Associated with Capital	**$ 6,371**	**$ 6,686**	**$ 6,898**
Miscellaneous Operations and Leak Management			
Leak Management	$ 2,366	$ 2,609	$ 2,786
Meters & Measurement	$ 902	$ 903	$ 903
Inspection Programs	$ 723	$ 718	$ 732
Technical Operations	$ (119)	$ (127)	$ (11)
Gas Control	$ (126)	$ (74)	$ (21)
Reconnects	$ (394)	$ (406)	$ (393)
Poor Pressure/No Gas	$ (497)	$ (495)	$ (495)
Total Miscellaneous Operations and Leak Management	**$ 2,855**	**$ 3,128**	**$ 3,501**
Compliance and Quality Assessment Staffing	**$ 1,685**	**$ 1,717**	**$ 1,753**
LNG Tank Coating	**$ 1,000**	**$ -**	**$ -**
Grand Total	**$ 22,911**	**$ 22,531**	**$ 23,152**

*dollars represented as incremental over historic year

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O&M WHITE PAPERS

	Capital
X	O&M

2017 – Gas Operations

Project/Program Title	Service Line Definition
Project Manager	TBD
Hyperion Project Number	N/A
Organization's Project Number	N/A
Status of Project	Not Started
Estimated Start Date	January 2017
Estimated Completion Date	December 2019
Work Plan Category	Operations and Maintenance

Work Description:

Inspection program that comprises all interior gas piping that is part of the gas service line as defined in 16 NYCRR Part 255, excluding all room sets (meters in apartments or other remote locations).

Justification Summary:

New York State Department of Public Service notified New York state utilities of a change in code that will update the definition of "Service Line" under 16 NYCRR Part 255.3(a)(29) to mirror the Federal definition under 49 CFR Part 192. This essentially changes the existing service line definition, which limited Operator responsibility for jurisdictional piping at the first fitting inside the building wall relative to the Federal definition which includes jurisdictional responsibility to the outlet of the meter, regardless of who owns the piping within the building.

On April 2, 2015, the New York State Public Service Commission issued its revision to 16 NYCRR Gas Safety Regulations, which revised the service line definition to align with the federal definition except for the implementation requirements, which were stayed pending further Commission action. The proposed change in language to 16 NYCRR §255.3(a) – the definition of service line – will have great impact on the Company. All of the Company's operations, practices and procedures have been geared to the definition of service line reflected to date in the Commission's regulations. Changes to the Company's process, procedures and performance of leak surveys and corrosion inspections for inside pipe extending to the outlet of the customer's meter will take significant time and additional resources to practically and effectively implement.

The Company has more than 1.1 million inside meter sets, with approximately 900,000 inside building sets, located in more readily accessible building areas (*e.g.,* basements), and over 200,000 inside building sets in apartments (room sets) or other remote locations that are much less readily accessible. The Company estimates the incremental cost of a leak survey and atmospheric corrosion inspection program that comprises all interior gas piping, excluding all room sets, would approximate $11 million annually. This is based on assuming an inside leak survey and corrosion inspection program, where the Company would address accessible inside piping associated with approximately 900,000 inside meters during a nine-year inspection cycle, pending the results of a proposed study of room sets.

Supplemental Information:

- Alternatives: No alternatives; code compliance.

- Risk of No Action: The Company could be subject to penalties for non-compliance.

- Non-financial Benefits: Compliance with state and federal gas safety codes.

- Summary of Financial Benefits (if applicable) and Costs: N/A

- Technical Evaluation/Analysis: The study will be supported by Northeast Gas Association (NGA) membership under contract with the Gas Technology Institute and includes developing a comprehensive New York State-specific inside piping assessment data set to support evaluation of an appropriate Distribution Integrity Management Program (DIMP) based reassessment frequency. The study will also focus on presumed unique low-risk installations referred to as "room sets". If detailed assessment confirms the low risk nature of these installations, a Special Permit may be pursued limiting the need for future inspections. The study is expected to commence in January 2016 and be completed by June 2017.

- Project Relationships (if applicable): N/A

- Basis for Estimate: This is based on assuming an inside leak survey and corrosion inspection program, where the Company would address accessible inside piping associated with approximately 800,000 inside meters during a nine-year inspection cycle, pending the results of a proposed study of room sets.

Total Funding Level ($000):

Historical Spend

Actual 2011	**Actual 2012**	**Actual 2013**	**Actual 2014**	**Historic Year** (O&M only)	**Forecast 2015**
				0	**0**

Historical Elements of Expense

(Historical EOE breakout will only be completed for Steam projects/programs of $500 thousand or more and, for all other organizations, projects/programs of $1million or more.)

EOE	**Actual 2011**	**Actual 2012**	**Actual 2013**	**Actual 2014**	**Historic Year** (O&M only)	**Forecast 2015**
Labor					**0**	**0**
M&S						
A/P						
Other						
Total						

Request ($000):

The Company is forecasting O&M expenditures of $11 million in RY2 and $11 million in RY3. However, because a final determination has not been made by Staff on the prescribed elements of compliance with this subsection of the Gas Safety Code, the Company seeks the ability to defer costs above and beyond the $11 million, per rate year, for future recovery.

Request 2016	**Request 2017**	**Request 2018**	**Request 2019**	**Request 2020**
0	**$11,000**	**$11,000**	**$11,000**	**$11,000**

Request by Elements of Expense

EOE	**2016**	**2017**	**2018**	**2019**	**2020**
Labor		$5,500	$5,500	$5,500	$5,500
M&S					
A/P		$5,500	$5,500	$5,500	$5,500
Other					
Overheads					
Total		**$11,000**	**$11,000**	**$11,000**	**$11,000**

	Capital
X	O&M

2017 – Gas Operations

Project/Program Title	LNG Tank Coating
Project Manager	Howard Goldberg
Hyperion Project Number	N/A
Organization's Project Number	N/A
Status of Project	Planning
Estimated Start Date	January 2017
Estimated Completion Date	December 2017
Work Plan Category	Operations and Maintenance

Work Description:

The Liquefied Natural Gas (LNG) Plant was placed in service in 1974. The LNG plant was constructed with a 290,000 barrel LNG tank. The LNG tank is the only in-city Company owned supply of natural gas and the tank stores liquid for peak winter days and upon contingency to the gas transmission system. This project is to coat the LNG Plant tank dome. The Contractor shall be responsible for all the coating cleaning and replacement coating of the LNG tank dome. It is estimated this coating system will have a service life of 15 years.

Justification Summary:

The LNG tank dome is comprised of 3/16 inch carbon steel plates which are welded together to create the dome surface. The LNG tank dome is coated to prevent rusting because rusting over time may lead to metal loss through corrosion process and impact the mechanical integrity of the tank. A third party metallurgist performed an engineering analysis and found the roof coating is approaching the end of its usable life through weathering. Furthermore, the report indicates certain local areas have evidence that the top coat has breached and the primer is all that is preventing the roof plates from rusting. If left as is, the tank dome may lose its integrity, resulting in the tank not being available for operations.

Supplemental Information:

- Alternatives: There are no alternatives to coating the tank. The coating system is required. The tank must be maintained at its operational design condition.

- Risk of No Action: Corrosion may comprise the LNG tank's dome integrity. In a worst case scenario this could result in injury and property damage.

- Non-financial Benefits: The new coating system will enhance the safety and reliability of the LNG Plant tank.

- Summary of Financial Benefits (if applicable) and Costs: The LNG tank establishes the storage capability for the liquid natural gas needed to supply the vaporization system. The vaporizers provide an hourly deliverability of 10,000dt/hr. The vaporization send out provides natural gas to meet peak shaving demand and addresses supply contingencies. Both of these typically occur

when interstate pipeline gas capacity to New York City is in great demand. Loss of vaporization capacity could expose the Company to the incremental daily cost of natural gas.

- Technical Evaluation/Analysis: Engineering inspection performed on the existing tank coating indicates the coating is no longer meeting the original design and is approaching the end of its useful life.

- Project Relationships (if applicable): N/A

- Basis for Estimate: The order of magnitude project cost estimate is based on a previous tank coating project.

Total Funding Level ($000):

Historical Spend

Actual 2011	**Actual 2012**	**Actual 2013**	**Actual 2014**	**Historic Year** (O&M only)	**Forecast 2015**
				0	**0**

Historical Elements of Expense

(Historical EOE breakout will only be completed for Steam projects/programs of $500 thousand or more and, for all other organizations, projects/programs of $1million or more.)

EOE	**Actual 2011**	**Actual 2012**	**Actual 2013**	**Actual 2014**	**Historic Year** (O&M only)	**Forecast 2015**
Labor						
M&S						
A/P						
Other						
Total						

Request ($000):

Request 2016	Request 2017	Request 2018	Request 2019	Request 2020
0	**$1,000**	**0**	**$**	**$**

Request by Elements of Expense

EOE	2016	2017	2018	2019	2020
Labor					
M&S					
A/P		$1,000			
Other					
Overheads					
Total		**$1,000**			

Gas Compliance & Quality Assessment Organization (Exhibit__GIOP-3)