Consolidated Edison Company of New York, Inc.

Report on 2021 First Quarter Capital Expenditures

Case 19-E-0065 – Proceeding on Motion of the Commission as to the Rates, Charges, Rules and Regulations of Consolidated Edison Company of New York, Inc. for Electric Service.

New York, New York

May 14, 2021

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TAB 1

Consolidated Edison Company of New York, Inc.
Capital Electric Transmission & Distribution Program Update

Thousands ($000)

	Mar 2021 YTD			2021 Year-End		
	Actuals	Budget	Variance	Target	Budget	Variance
Electric T&D						
Electric Distribution	$227,579	$238,316	($10,737)	$953,907	$952,907	$1,000
Substations	$85,945	$110,702	($24,756)	$397,204	$397,204	$0
System & Transmission Ops	$14,045	$18,859	($4,815)	$102,306	$97,306	$5,000
Subtotal Electric T&D	**$327,569**	**$367,877**	**($40,308)**	**$1,453,417**	**$1,447,416**	**$6,001**
Public Improvement	$33,407	$41,734	($8,327)	$145,100	$157,000	($11,900)
Subtotal T&D w/ PI	**$360,976**	**$409,611**	**($48,635)**	**$1,598,517**	**$1,604,416**	**($5,899)**
Central Engineering	$18	$0	$18	$610	$0	$610
Customer Energy Solutions	$8,460	$17,254	($8,794)	$61,640	$66,477	($4,836)
Grand Total Electric T&D	**$369,455**	**$426,865**	**($57,411)**	**$1,660,767**	**$1,670,893**	**($10,126)**
Electric Production	$3,356	$4,535	($1,179)	$20,559	$22,000	($1,442)
Advanced Metering Infrastructure	$42,281	$70,443	($28,162)	$172,000	$281,677	($109,677)
Common IT	$56,944	$69,533	($12,589)	$304,358	$294,828	$9,530
Common Facilities	$28,439	$13,757	$14,681	$144,453	$142,506	$1,947
Grand Total Common	**$85,383**	**$83,291**	**$2,092**	**$448,812**	**$437,334**	**$11,477**
Total Capital Expenditures	**$500,475**	**$585,134**	**($84,659)**	**$2,302,137**	**$2,411,905**	**($109,768)**

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TAB 2

System & Transmission Operations Capital Summary

Thousands ($000)

	March 2021 YTD			2021 Year-End		
Program Description	**Actuals**	**Budget**	**Variance**	**Target**	**Budget**	**Variance**
Environmental	$0	$0	$0	$600	$600	$0
Information Technology	$69	$121	($52)	$618	$572	$46
Replacement	$12	$2,695	($2,683)	$10,435	$11,000	($565)
System Expansion	$192	$0	$192	$5,284	$0	$5,284
Risk Reduction	$13,488	$15,090	($1,603)	$81,656	$81,406	$250
Safety & Security	$284	$953	($669)	$3,713	$3,728	($15)
Subtotal System & Transmission Operations	$14,045	$18,859	($4,815)	$102,306	$97,306	$5,000
Public Improvement	$272	$16,747	($16,475)	$11,050	$63,000	($51,950)
Grand Total System & Transmission Operations	$14,316	$35,606	($21,290)	$113,356	$160,306	($46,950)

System & Transmission Operations Capital Programs & Projects

Thousands ($000)

	Mar 2021 YTD			2021 Year-End		
	Actuals	Budget	Variance	Target	Budget	Variance
Environmental						
Environmental Enhancements Program	$0	$0	$0	$600	$600	$0
Environmental Total	**$0**	**$0**	**$0**	**$600**	**$600**	**$0**
Information Technology						
Operation Management System at Energy Control Center	($2)	$0	($2)	($2)	$0	($2)
Distribution Orders Enhancements	$25	$59	($34)	$268	$272	($4)
EMS Reliability AECC and ECC	$10	$62	($52)	$303	$300	$3
Area Station Wireless Communication Upgrade	$36	$0	$36	$49	$0	$49
Information Technology Total	**$69**	**$121**	**($52)**	**$618**	**$572**	**$46**
Replacement						
Transmission Feeder Failures	$12	$2,451	($2,439)	$9,435	$10,000	($565)
Transmission Failures - Other (Potheads)	$0	$244	($244)	$1,000	$1,000	$0
Replacement Total	**$12**	**$2,695**	**($2,683)**	**$10,435**	**$11,000**	**($565)**
System Expansion						
Rainey to Corona 138 kV Feeder	$188	$0	$188	$280	$0	$280
Rainey to Corona II 138 kV Feeder	$0	$0	$0	$5,000	$0	$5,000
Transmission Operations Other - System Expansion Projects	$4	$0	$4	$4	$0	$4
System Expansion Total	**$192**	**$0**	**$192**	**$5,284**	**$0**	**$5,284**
Risk Reduction						
Pipe Enhancement Program	$4,465	$2,992	$1,473	$25,000	$25,000	$0
Joint Replacement Program	$7,100	$7,500	($400)	$15,000	$15,000	$0
Emergent Transmission Reliability Program	$871	$0	$871	$1,200	$0	$1,200
Dynamic Feeder Rating System Program	$129	$368	($239)	$1,500	$1,500	$0
Overhead Transmission Structures Program	$352	$527	($175)	$2,000	$2,000	$0
Underground Transmission Structure Modernization	$479	$491	($12)	$2,000	$2,000	$0
Feeder38R51/38R52 Replacement Project	$51	$2,251	($2,200)	$23,006	$23,006	$0
Feeder Replacement Program	$0	$0	$0	$3,500	$3,500	$0
Overhead Transmission Reliability	$0	$0	$0	$0	$2,300	($2,300)
Transmission Resiliency System	$0	$0	$0	$1,500	$1,500	$0
AMTRAK PSA-OAK	$0	$900	($900)	$5,000	$5,000	$0
Mobile Program Transmission Feeder Leak Detection Program	$0	$0	$0	$300	$300	$0
Transmission Operations Other - Risk Reduction Project	$0	$0	$0	$600	$0	$600
UPS Replacement at the AECC	$0	$0	$0	$750	$0	$750
System Operation Enhancement	$40	$61	($21)	$300	$300	$0
Risk Reduction Total	**$13,488**	**$15,090**	**($1,603)**	**$81,656**	**$81,406**	**$250**
Safety & Security						
Overhead Tower Rapid Rail Program	$182	$898	($716)	$3,328	$3,328	$0
ECC and AECC Security Enhancements	$102	$55	$47	$385	$400	($15)
Safety & Security Total	**$284**	**$953**	**($669)**	**$3,713**	**$3,728**	**($15)**
Subtotal System & Transmission Operations	**$14,045**	**$18,859**	**($4,815)**	**$102,306**	**$97,306**	**$5,000**
Public Improvement	**$272**	**$16,747**	**($16,475)**	**$11,050**	**$63,000**	**($51,950)**
Grand Total System & Transmission Operations	**$14,316**	**$35,606**	**($21,290)**	**$113,356**	**$160,306**	**($46,950)**

Central Operations / System & Transmission Operations
2021

1. Project / Program Summary

Type: ☒ Project ☐ Program	**Category: ☒ Capital ☐ O&M**
Work Plan Category: ☐ Regulatory Mandated ☒ Operationally Required ☐ Strategic	
Project/Program Title: Rainey to Corona II – New 138kV Feeder	
Project/Program Manager: Various	**Project/Program Number (Level 1):**
Status: ☒ Planning ☐ Design ☐ Engineering ☐ Construction ☐ Ongoing ☐ Other: _____	
Estimated Start Date: January 2021	**Estimated Date In Service: May 2023**
A. Total Funding Request ($000) **Capital: $275,000** **O&M:** **Retirement:**	**B.** **☐ 5-Year Gross Cost Savings ($000)** **☐ 5-Year Gross Cost Avoidance ($000)** **O&M:** **Capital:**
C. 5-Year Ongoing Maintenance Expense ($000) **O&M:** **Capital:**	**D. Investment Payback Period:** **(Years/months)**

Work Description:

This project will establish a second transmission tie between the Rainey 345kV substation and the Corona 138kV substation via a new Phase Angle Regulator (PAR)-controlled 138kV solid dielectric feeder. The route for the underground feeder will be approximately 6 miles and will be installed via a trench and conduit system. The connections for a new transmission feeder will require new bus sections in both the Rainey and Corona Substations. The new bus section at Rainey Substation will require the addition of 345kV circuit breakers, a 345kV to 138kV auto-transformer, relay protection and a termination stand for the new feeder. A 138kV PAR will also be installed in series with the line at the Rainey Substation, for the purpose of regulating the power transfer across the line under all conditions within rated limits. The bus section at Corona Substation will require the addition of 138kV circuit breakers, relay protection and a terminal stand for the new feeder.

Engineering and long lead equipment procurement will begin in 2021 for this project and construction is expected to begin in early 2022. The in-service date of this project is May 2023.

Justification Summary:

The need for new tie lines between transmission stations in the Con Edison system is identified through various long-range planning processes. These processes consider forecasted demand, equipment ratings, modelled power-flow characteristics and available generation capacity. The necessity for a second transmission tie between Rainey and Corona Substations was identified through the 2020 Reliability Needs Assessment (RNA) process. Changes in various environmental regulations that impact generators in New York State, as well as goals for the reduction of greenhouse gases are significant drivers in the need for this project.

In efforts to protect the environment and reduce ozone pollution, the New York State Department of Environmental Conservation (NYSDEC) has proposed air emission regulations for simple cycle and regenerative combustion turbines during the ozone season. The primary goal of this regulation is to lower the allowable oxides of nitrogen (NOx) emissions from older peaking units during the ozone season, which is driving Company owned peaking units, gas turbines, and third party-owned generation towards replacement or retirement. The reduced emissions would contribute to realizing New York's clean energy and climate agenda in the Climate Leadership and Community Protection Act (CLCPA), protect the stratospheric ozone layer and protect the health of New York State residents.

The CLCPA has established greenhouse gas emission reduction limits associated with imported electricity and fossil fuels in New York State, as well as additional climate change goals to include 70% renewable electricity by 2030 and 100% zero emission electricity by 2040. The NYSDEC has coordinated with the NYISO to ensure that compliance with NOx emissions regulations and CLCPA policy objectives would not adversely affect grid reliability. In reviewing projected impacts driven by DEC NOx limitations on generator emissions and by policy goals from the CLCPA, NYISO's 2020 Reliability Needs Assessment (RNA) has considered forecasts of peak power demand, planned upgrades to the transmission system, and generation modifications through 2030.

The 2020 RNA has identified system deficiencies on the Astoria East/Corona 138kV Transmission Load Area (TLA) which impede the delivery of renewables that are exacerbated by local peaking units and generator emissions. The RNA has also observed thermal overloads on the Astoria East/Corona 138kV TLA boundary feeders. The Astoria East/Corona 138kV TLA is designed for second contingency (N-1-1-0) and is anticipated to not meet this reliability criteria for the forecasted peak summer load in 2023.

Operationally required improvements are essential for the Astoria East/Corona 138kV TLA to meet reliability criteria. To address the reliability design criteria deficiency prior to the summer of 2023, as well as comply with CLCPA and DEC NOx emissions standards, a 2nd Rainey to Corona 138kV Phase Angle Regulator (PAR)-controlled feeder shall be installed and placed in service by 2023. The new feeder will enable renewable energy supply to access the load, as well as reduce dependency on local fossil fuel plants to maintain local reliability needs.

Relationship to 5-Year and Long-Range Plans and Enterprise Risk Management Strategy

The operational measures and system improvements implemented with this project would be sufficient to satisfy reliability, safety, and compliance regulations, manage constraints that limit renewable energy delivery within the system and address the forecasted peak summer load in 2023.

2. Supplemental Information

Alternatives

General strategies that may be considered for addressing a TLA deficiency include: Load transfers between adjacent networks, new generation, or non-wires solutions. Below is a discussion of alternatives as they pertain to the deficiencies addressed by this project.

Alternative 1

Load Transfer – This strategy would involve transferring load from the affected areas into adjacent networks that are supplied from different TLAs. In this scenario, the adjacent networks or the adjacent TLA do not have sufficient excess capacity to absorb the deficiencies. The adjacent networks not fed from the same TLA are Maspeth, Sunnyside, Borden and Richmond Hill. The adjacent TLA is the Jamaica/Corona TLA, which overlaps the Astoria East/Corona TLA and does not have sufficient capacity to absorb the deficiency.

Alternative 2
Non-Wires Solutions/Energy Efficiency Measures – Customer-sided solutions may aid in the deferral of traditional solutions for multiple years through the implementation of energy efficiency programs. Energy efficiency programs can provide cost-beneficial solutions across multiple customer segments by accelerating load relief through little-to-no cost energy efficient upgrades. Based on the magnitude of load relief required to address the TLA deficiency under a limited time frame, it has been assessed that an energy efficiency program is not a feasible option to address the reliability needs identified in the RNA. There is no known contingency plan other than to pursue the identified traditional solution should this alternative be pursued and prove unable to meet the projected deficits.

Alternative 3
Non-Wires Solutions/Energy Storage – Energy storage can provide support to the distribution system, integrate intermittent renewable resources, lower emissions, and provide load relief for targeted areas. Battery storage was considered to address load relief needs however, given the abrupt implementation timeframe, the limited capacity of 2MW/10.5MWh does not provide sufficient capacity to address the large deficiency of 659 MWh (10 hours) for a peak day in 2023 and is not deemed a viable alternative.

Risk of No Action

If this project is not pursued, there would be no improvement to the reliability of the Astoria East/Corona TLA. Furthermore, the risk of no action is that a contingency at peak load, in the year 2023, would result in load shedding at the stations served by Astoria East, Corona and/or Jamaica as well as fall out of compliance with DEC NOx regulations and CLCPA goals.

Non-Financial Benefits

This project will provide the necessary reliability in an area of New York City that serves many critical loads (e.g., airports, transportation hubs, and hospitals) in a densely populated area where many buildings have elevators and various equipment loads. The project will also achieve environmental policy objectives and comply with related NYSDEC requirements in the CLCPA.

Summary of Financial Benefits and Costs

N/A

Technical Evaluation / Analysis

Based on the required capacity increase for the Astoria East/Corona 138kV TLA and to address the N-1-1-0 design deficiency, a transmission upgrade would be the only viable alternative for the support of the TLAs. Con Edison is proposing a new 345/138kV Phase Angle Regulator (PAR)-controlled feeder between Con Edison's Rainey and Corona substation, with a proposed in-service date of summer 2023.

The feeder will be approximately 7 miles long, and will be equipped with a 345/138kV transformer and a PAR that will respectively have the same ratings as the transformer, PAR, and feeder as the recently installed 1st Rainey to Corona 138kV feeder (placed in-service in 2019). The new 138kV feeder between the Rainey 345kV and Corona 138kV Substations will have a nominal capacity of approximately 300 MW, enabling 300 MW of renewable energy supply to access the load, as well as reducing dependency on local fossil fuel power plants to maintain local reliability needs.
Project Relationships (if applicable) N/A
Basis for Estimate This estimate is based on a conceptual scope of the project and on order of magnitude estimates.

3. Funding Detail

Historical Spend

	Actual 2016	**Actual 2017**	**Actual 2018**	**Actual 2019**	**Historic Year** (O&M only)	**Forecast 2020**
Capital						
O&M						
Retirement						

Total Request ($000):

Total Request by Year:

	Request 2021	**Request 2022**	**Request 2023**	**Request 2024**	**Request 2025**
Capital	$27,500	$192,500	$55,000		
O&M*					
Retirement					

Capital Request by Elements of Expense:

EOE	**2021**	**2022**	**2023**	**2024**	**2025**
Labor	$1,867	$13,067	$3,733		
M&S	$4,895	$34,268	$9,791		
Contract Services	$6,647	$46,526	$13,293		
Other	$1,732	$12,123	$3,464		
Overheads	$6,338	$44,363	$12,675		
Subtotal	$21,478	$150,348	$42,956		
Contingency	$6,022	$42,153	$12,044		
Total	$27,500	$192,500	$55,000		

Total Gross Cost Savings / Avoidance by Year:

	2021	2022	2023	2024	2025
O&M Savings					
O&M Avoidance					
Capital Savings					
Capital Avoidance					

Total Ongoing Maintenance Expense by Year:

	2021	2022	2023	2024	2025
O&M					
Capital					

X	Capital
	O&M

2021 Capital – System and Transmission Operations

Project/Program Title	UPS AECC & ATS ECC/AECC
Project Manager	Dennis Holmes
Project Number	
Status of Project	Project Not Started
Estimated Start Date	April 2021
Estimated Completion Date	December 2022
Work Plan Category	Regulatory Mandated

Work Description:

Replace the two existing UPS units at the Alternate Energy Control Center and install automatic transfer switches at Energy Control Center and Alternate Energy Control Center.

Justification Summary:

The two UPS (Uninterrupted Power Supply) units are now discontinued by the manufacturer and need to be replaced in order to provide the necessary power conditioning and emergency back-up for the critical computer systems at the AECC. Also, their associated batteries are at the end of their life and failing at an increased rate. The UPS units are also required as part of NPCC Directory 8, which requires that critical systems survive the transfer from utility power to emergency generation. The UPS devices provide this ride through capability. Also, the transfer of load between UPS units in case one is out of service is currently manual. In addition, battery banks cannot be switched between UPS units without having to disconnecting and/or shutting all of them down.

The installation of the static transfer switches will provide redundancy for control center critical load in the event of the unavailability of a UPS unit. The Alternate Energy Control Center currently does not have the ability to switch critical load between UPS units in the event of failure. The Energy Control Center has a manual transfer capability but only after the connected load is de-energized, which does not provide on the fly protection. The installation of static transfer switches will also allow safe power reconfiguration for required switchgear work such as trip checks and other required bus section outages.

Supplemental Information:

- Alternatives:
  None. The two Symmetra 80K UPS units are deemed to have approached the end of service life (EOSL) and must be replaced for protection and uninterrupted transfer of load to the emergency diesel generators in the event of a loss of power.

- Risk of No Action:
  Failure of UPS units, without the ability to repair issues due to the unavailability of parts. Failure to provide protection and uninterrupted transfer of critical load to the diesel generators due any loss of power at the Alternate Energy Control Center.

- Non-financial Benefits:

Provide protection and uninterrupted transfer of critical load to the diesel generators due to a loss of power at the Alternate Energy Control Center.

- Summary of Financial Benefits (if applicable) and Costs:
  Prevention of damaged Alternate Energy Control Center critical computer equipment due to the loss of power and transfer of load on an emergency diesel generator.

- Technical Evaluation/Analysis:
  The two Symmetra 80K UPS units and their associated batteries are deemed to have approached the end of service life (EOSL) and are difficult to obtain parts and components for repairs. The longer that we continue to use these UPS units, the more difficult it will be for the manufacturer to repair them upon failure.

- Project Relationships (if applicable):
  Not applicable.

- Basis for Estimate:
  The basis for estimate is based on a similar UPS replacement project at the ECC in 2019.

Total Funding Level ($000):

Historical Spend

Actual 2017	Actual 2018	Actual 2019	Actual 2020	Historic Year (O&M only)	Forecast 2021
					$750K

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 2017	Actual 2018	Actual 2019	Actual 2020	Historic Year (O&M only)	Forecast 2021
Labor						
M&S						
A/P						
Other						
Overheads						
Total						

Request ($000):

Request 2021	Request 2022	Request 2023	Request 2024	Request 2025
$750	$800	$0	$0	$0

Request by Elements of Expense:

EOE	2021	2022	2023	2024	2025
Labor	108	133			
M&S					
A/P	500	500			
Other	75	75			
Overheads	67	92			
Total	**750**	**800**			

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TAB 3

Substations Capital Summary

Thousands ($000)

	March 2021 YTD			2021 Year-End		
Program Description	**Actuals**	**Budget**	**Variance**	**Target**	**Budget**	**Variance**
Environmental	**$23,056**	**$22,559**	**$496**	**$76,000**	**$76,000**	**$0**
Risk Reduction	**$31,428**	**$48,563**	**($17,135)**	**$181,934**	**$184,214**	**($2,280)**
System Expansion	**$15,190**	**$28,959**	**($13,769)**	**$86,440**	**$86,440**	**$0**
Replacement	**$10,771**	**$8,370**	**$2,401**	**$41,030**	**$39,000**	**$2,030**
Safety & Security	**$5,085**	**$2,250**	**$2,835**	**$11,550**	**$11,550**	**$0**
Subtotal Electric Substations	**$85,530**	**$110,702**	**($25,171)**	**$396,954**	**$397,204**	**($250)**
Storm Hardening	**$415**	**$0**	**$415**	**$250**	**$0**	**$250**
Grand Total Substations	**$85,945**	**$110,702**	**($24,756)**	**$397,204**	**$397,204**	**($0)**

Substations Capital Programs & Projects

Thousands ($000)

	Mar 2021 YTD			2021 Year-End		
	Actuals	Budget	Variance	Target	Budget	Variance
Environmental						
Substation EH&S Risk Mitigation Program	$23,056	$22,559	$496	$76,000	$76,000	$0
Environmental Total	**$23,056**	**$22,559**	**$496**	**$76,000**	**$76,000**	**$0**
Risk Reduction						
138Kv Disturbance Monitoring Program	($0)	$525	($525)	$2,099	$2,099	$0
Category Alarm Program Various	$89	$423	($334)	$1,565	$1,565	$0
DC System Upgrade Program	$993	$964	$29	$5,092	$5,092	$0
Disconnect Switch Capital Upgrade Program	$343	$1,074	($731)	$2,375	$2,375	$0
Jamaica Install Additional Breakers in Bus Section 2E & 3W	$3	$0	$3	$0	$0	$0
Circuit Switcher Replacement Program	$1	$65	($64)	$1,300	$1,300	$0
Other Capital Equipment Upgrades	$544	$780	($236)	$3,000	$3,000	$0
Pumping Plants	$1,396	$1,170	$226	$4,180	$4,180	$0
Ramapo Install New Surge Arrestors	$44	$0	$44	$500	$500	$0
Reinforced Ground Grid Program	($41)	$507	($548)	$2,000	$2,000	$0
Relay Protection Communication Upgrades	$210	$700	($490)	$3,500	$3,500	$0
Retrofit Overdutied 13kV & 27kV Circuit Breaker Programs	$3,401	$2,508	$893	$12,500	$12,500	$0
Substation Enclosure Upgrade Program	$209	$325	($116)	$920	$1,300	($380)
Structural and Infrastructure Upgrades	$1,406	$1,305	$101	$5,932	$5,932	$0
RTU Upgrade Program	$0	$31	($31)	$2,512	$2,512	$0
Transmission Station Metering & SCADA Upgrades	$134	$309	($175)	$1,566	$1,566	$0
Condition Based Monitoring	$2,297	$2,541	($244)	$11,200	$12,100	($900)
Fire Suppression System Upgrade	$296	$1,111	($814)	$5,500	$5,500	$0
High Voltage Test Set Program	$30	$89	($59)	$1,775	$1,775	$0
Relay Modification Program	$6,810	$5,973	$836	$20,000	$20,000	$0
Roof Replacement Program	$7	$283	($276)	$1,627	$1,627	$0
Auxiliary Station Equipment Program	$335	$188	$148	$750	$750	$0
Cap & Pin Insulator Replacement Program	$0	$181	($181)	$750	$750	$0
High Voltage Circuit Breaker Capital Upgrade Program	($289)	$2,568	($2,857)	$9,500	$9,500	$0
SSO Loss Contingency Area Stat Rapid Recovery/Trans Resiliency [1]	$726	$2,351	($1,625)	$9,405	$9,405	$0
Substation Transformer Replacement Program	$9,029	$10,400	($1,371)	$40,000	$40,000	$0
U Type Bushing Replacement Program	$313	$521	($208)	$1,736	$1,736	$0
Mobile Control Center	$106	$0	$106	$0	$0	$0
East River Automation - Upgrade the 69 kV Yard	$0	$2,000	($2,000)	$1,000	$2,000	($1,000)
Area Reliability	$2,870	$3,584	($714)	$12,000	$12,000	$0
Protection, Automation and Control Program	$0	$0	$0	$5,000	$5,000	$0
Substation Indian Point Retirement Program	$0	$0	$0	$400	$400	$0
Elmsford 138kV Disconnect Switches	$0	$0	$0	$1,100	$1,100	$0
Pothead Pressure Alarms	$0	$38	($38)	$150	$150	$0
Gas Insulated Substation Replacement Program	$114	$5,600	($5,486)	$8,000	$8,000	$0
Area Substation Phased Equipment Program	$0	$450	($450)	$3,000	$3,000	$0
GL to PA Mapping	$49	$0	$49	$0	$0	$0
Risk Reduction Total	**$31,428**	**$48,563**	**($17,135)**	**$181,934**	**$184,214**	**($2,280)**
System Expansion						
Cricket Valley Contractor Oversight	($94)	$0	($94)	$0	$0	$0
Vinegar Hill DSS	$14,809	$27,338	($12,529)	$79,953	$79,953	$0
Parkchester 2 Replace Limiting 13KV Bus Sections No. 2	$61	$0	$61	$0	$0	$0
E. 179th Street Switchgear and Bus Replacement	$410	$1,621	($1,211)	$6,487	$6,487	$0
Astoria Feeder 34124L Cable Bypass	$4	$0	$4	$0	$0	$0
System Expansion Total	**$15,190**	**$28,959**	**($13,769)**	**$86,440**	**$86,440**	**$0**
Replacement						
Failed Substation Transformer Program	$9,152	$7,200	$1,952	$32,030	$30,000	$2,030
Failed Substation Equipment Other than Transformers	$1,540	$1,170	$370	$6,500	$6,500	$0
Hellgate Dock Refurbishment (SSO portion)	$79	$0	$79	$2,500	$2,500	$0
Replacement Total	**$10,771**	**$8,370**	**$2,401**	**$41,030**	**$39,000**	**$2,030**
Safety & Security						
Critical Infrastructure Protection (NERC) Security Upgrades	$19	$77	($58)	$500	$500	$0
Substations Security Enhancement Program	$4,726	$1,700	$3,025	$10,000	$10,000	$0
Cable Termination Platform Program	$340	$472	($132)	$1,050	$1,050	$0
Safety & Security Total	**$5,085**	**$2,250**	**$2,835**	**$11,550**	**$11,550**	**$0**
Subtotal Substations	**$85,530**	**$110,702**	**($25,171)**	**$396,954**	**$397,204**	**($250)**
Storm Hardening						
Storm Hardening	$415	$0	$415	$250	$0	$250
Storm Hardening Total	**$415**	**$0**	**$415**	**$250**	**$0**	**$250**
Grand Total Substations	**$85,945**	**$110,702**	**($24,756)**	**$397,204**	**$397,204**	**($0)**

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TAB 4

Electric Production Capital Summary

Thousands ($000)

	March 2021 YTD			2021 Year-End		
Program Description	**Actuals**	**Budget**	**Variance**	**Target**	**Budget**	**Variance**
Environmental	**($14)**	**$2,590**	**($2,604)**	**$10,819**	**$16,550**	**($5,731)**
Replacement	**$94**	**$273**	**($179)**	**$682**	**$800**	**($118)**
Risk Reduction	**$3,272**	**$1,671**	**$1,601**	**$9,058**	**$4,650**	**$4,408**
Safety & Security	**$4**	**$0**	**$4**	**$0**	**$0**	**$0**
Grand Total Electric Production	**$3,356**	**$4,535**	**($1,179)**	**$20,559**	**$22,000**	**($1,442)**

Electric Production Capital Programs & Projects

Thousands ($000)

	Mar 2021 YTD			2021 Year-End		
	Actuals	Budget	Variance	Target	Budget	Variance
Environmental						
EP Environmental - East River	($14)	$2,590	($2,604)	$10,819	$16,550	($5,731)
Environmental Total	**($14)**	**$2,590**	**($2,604)**	**$10,819**	**$16,550**	**($5,731)**
Replacement						
EP Replacement - East River	$77	$0	$77	$82	$0	$82
EP Instrument & Control Replacement - East River	$0	$273	($273)	$600	$800	($200)
EP Replacement - 74th Street Complex	$17	$0	$17	$0	$0	$0
Replacement Total	**$94**	**$273**	**($179)**	**$682**	**$800**	**($118)**
Risk Reduction						
EP Risk Reduction - East River	($16)	$0	($16)	($17)	$0	($17)
EP Risk Reduction - 74th Street Complex	$232	$0	$232	$0	$0	$0
EP Electrical & Controls - East River Unit 70	$351	$0	$351	$229	$0	$229
EP Electrical & Controls - 74th Street	$47	$0	$47	$0	$0	$0
EP Electrical & Controls - Hudson Avenue	($44)	$0	($44)	($44)	$0	($44)
EP Civil & Structural - East River Unit 70	$1,631	$0	$1,631	$4,134	$0	$4,134
EP Civil & Structural - East River	$0	$1,577	($1,577)	$177	$2,700	($2,523)
EP Civil & Structural - 74th Street	$0	$0	$0	$600	$800	($200)
EP Civil & Structural - Hudson Avenue	$268	$0	$268	$1,000	$0	$1,000
EP Instrument & Control Risk Reduction - East River	$0	$94	($94)	$919	$950	($31)
EP Mechanical - East River Unit 70	$803	$0	$803	$1,860	$0	$1,860
EP Mechanical - East River	$0	$0	$0	$200	$200	$0
Risk Reduction Total	**$3,272**	**$1,671**	**$1,601**	**$9,058**	**$4,650**	**$4,408**
Safety & Security						
EP Safety/Security - East River	$2	$0	$2	$0	$0	$0
EP Safety/Security - 74th Street Complex	$2	$0	$2	$0	$0	$0
Safety & Security Total	**$4**	**$0**	**$4**	**$0**	**$0**	**$0**
Grand Total Electric Production	**$3,356**	**$4,535**	**($1,179)**	**$20,559**	**$22,000**	**($1,442)**

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TAB 5

Electric Distribution Capital Summary

Thousands ($000)

	March 2021 YTD			2021 Year-End		
Program Description	**Actuals**	**Budget**	**Variance**	**Target**	**Budget**	**Variance**
New Business	$44,783	$50,334	($5,551)	$204,157	$204,657	($500)
Replacement	$117,796	$99,826	$17,970	$407,977	$407,593	$384
Risk Reduction	$32,687	$41,374	($8,687)	$149,462	$156,468	($7,005)
System Expansion	$9,131	$15,934	($6,803)	$72,827	$67,217	$5,609
Oil Minders Environmental	$262	$422	($160)	$1,700	$1,700	$0
Equipment Purchases	$22,882	$30,359	($7,477)	$115,001	$115,001	($0)
Information Technology	$0	$68	($68)	$270	$270	$0
Subtotal Electric Distribution	$227,541	$238,316	($10,775)	$951,395	$952,907	($1,512)
Storm Hardening	$38	$0	$38	$2,512	$0	$2,512
Subtotal Electric Distribution w/ Storm Hardening	$227,579	$238,316	($10,737)	$953,907	$952,907	$1,000
Public Improvement	$33,136	$24,988	$8,148	$134,050	$94,000	$40,050
Grand Total Electric Distribution	$260,715	$263,303	($2,588)	$1,087,957	$1,046,907	$41,050

Electric Distribution Capital Programs & Projects

Thousands ($000)

	Mar 2021 YTD			2021 Year-End		
	Actuals	Budget	Variance	Target	Budget	Variance
New Business						
New Business	$38,431	$39,115	($684)	$158,501	$159,001	($500)
Meter Installation	$6,352	$7,339	($987)	$30,006	$30,006	$0
EV Charging	$0	$3,880	($3,880)	$15,650	$15,650	$0
New Business Total	**$44,783**	**$50,334**	**($5,551)**	**$204,157**	**$204,657**	**($500)**
Replacement Total						
Overhead	$18,829	$9,173	$9,656	$39,843	$39,526	$317
Primary Cable Replacement	$28,683	$22,498	$6,184	$92,841	$88,483	$4,358
Secondary Open Mains	$36,350	$33,000	$3,350	$124,150	$126,141	($1,991)
Street Lights (Incl. Conduit)	$5,602	$6,852	($1,250)	$27,424	$27,424	$0
Targeted Primary DBC Replacement	$1,740	$2,544	($804)	$13,005	$13,005	($0)
Temporary Services (Incl. Conduit)	$15,998	$16,437	($439)	$71,827	$73,827	($2,000)
Transformer Installation - Banks Off	$10,593	$9,321	$1,272	$38,886	$39,186	($300)
Replacement Total	**$117,796**	**$99,826**	**$17,970**	**$407,977**	**$407,593**	**$384**
Risk Reduction						
ATS Installation USS Reliability XW	$164	$0	$164	$0		$0
Modernization and Other	$2,584	$3,124	($540)	$14,008	$18,589	($4,581)
Osmose (C Truss)	$398	$275	$123	$2,090	$1,333	$757
Overhead Reliability	$5,141	$9,348	($4,206)	$37,000	$37,000	$0
Pressure, Temperature and Oil Sensors	$394	$496	($102)	$2,002	$2,002	($0)
Primary Feeder Reliability	$8,832	$6,010	$2,822	$24,938	$13,793	$11,145
Remote Monitoring System 3rd Generation	$313	$489	($176)	$2,016	$2,016	($0)
Shunt reactors	$139	$623	($484)	$1,000	$2,500	($1,500)
Transformer Vault Modernization	$7,311	$3,974	$3,337	$19,612	$17,112	$2,500
Underground Secondary Reliability Program	$3,370	$9,788	($6,417)	$21,875	$33,875	($12,000)
Vented Service Box Covers	$27	$250	($223)	$1,000	$1,000	$0
Critical Facility Program	$2,291	$2,346	($55)	$9,000	$9,000	($0)
Hellgate Dock Refurbishment	$0	$212	($212)	$850	$850	($0)
OH Resiliency	$329	$506	($177)	$2,100	$2,100	$0
Smart Sensors For Structures	$417	$1,517	($1,100)	$2,750	$6,299	($3,549)
UG Network Resiliency	$638	$994	($356)	$4,000	$4,000	$0
28th Street- Flush	$27	$0	$27	$1,991	$0	$1,991
OH & UG Training Yards - Victory Blvd	$1	$0	$1	$206	$0	$206
Security Fencing for Unit Substations on SI	$309	$0	$309	$525	$0	$525
Willowbrook / Wainwright Contingency	$0	$1,423	($1,423)	$2,500	$5,000	($2,500)
Risk Reduction Total	**$32,687**	**$41,374**	**($8,687)**	**$149,462**	**$156,468**	**($7,005)**
System Expansion						
179th St Area Substation Reconstruction	$442	$122	$320	$488	$488	$0
Cable Crossing (XW Riverdale & BQ Flushing)	$202	$1,460	($1,257)	$3,906	$4,656	($750)
Network Transformer Relief	$1,646	$1,541	$105	$10,651	$9,051	$1,600
NonNetwork Fdr Relief (Open Wire)	$2,213	$1,219	$994	$9,822	$5,792	$4,030
Overhead Transformer Relief	$852	$486	$366	$3,867	$2,299	$1,568
Primary Feeder Relief	$839	$842	($3)	$2,480	$3,880	($1,400)
Secondary Main Relief	$1,171	$1,263	($92)	$5,065	$5,065	$0
Woodrow Load Area	$90	$0	$90	$52		$52
Yorkville Crossings and Feeder Relief	$1	$737	($736)	$4,980	$4,980	($0)
Other System Expansion	$14	$0	$14	$0		$0
Nevins St. Battery Storage	$73	$1,252	($1,179)	$5,093	$5,007	$87
Load Transfer W42nd St to Astor	$1,381	$2,013	($632)	$6,000	$6,000	($0)
West Bronx to Central Bronx Load Transfer	$0	$5,000	($5,000)	$20,000	$20,000	$0
BQDM Non Traditional	$207	$0	$207	$423	$0	$423
System Expansion Total	**$9,131**	**$15,934**	**($6,803)**	**$72,827**	**$67,217**	**$5,609**

Electric Distribution Capital Programs & Projects continued

	Mar 2021 YTD			2021 Year-End		
	Actuals	Budget	Variance	Target	Budget	Variance
Environmental						
Oil Minders	$262	$422	($160)	$1,700	$1,700	$0
Environmental Total	**$262**	**$422**	**($160)**	**$1,700**	**$1,700**	**$0**
Equipment Purchases						
Meter Purchase	$1,422	$2,500	($1,078)	$10,000	$10,000	$0
Transformer Purchases	$21,460	$27,859	($6,399)	$105,001	$105,001	($0)
Equipment Purchases Total	**$22,882**	**$30,359**	**($7,477)**	**$115,001**	**$115,001**	**($0)**
Information Technology						
Install Telecom Facilities	$0	$68	($68)	$270	$270	$0
Information Technology Total	**$0**	**$68**	**($68)**	**$270**	**$270**	**$0**
Subtotal Electric Distribution	**$227,541**	**$238,316**	**($10,775)**	**$951,395**	**$952,907**	**($1,512)**
Storm Hardening						
120/208V Non-Submersible Unit Replacement	$38	$0	$38	$12	$0	$12
Selective Undergrounding	$0	$0	$0	$2,500	$0	$2,500
Storm Hardening Total	**$38**	**$0**	**$38**	**$2,512**	**$0**	**$2,512**
Subtotal Electric Distribution w/ Storm Hardening	**$227,579**	**$238,316**	**($10,737)**	**$953,907**	**$952,907**	**$1,000**
Public Improvement	**$33,136**	**$24,988**	**$8,148**	**$134,050**	**$94,000**	**$40,050**
Grand Total Electric Distribution	**$260,715**	**$263,303**	**($2,588)**	**$1,087,957**	**$1,046,907**	**$41,050**

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Advanced Metering Infrastructure Capital Programs & Projects

Thousands ($000)

	Mar 2021 YTD			2021 Year-End		
	Actuals	Budget	Variance	Target	Budget	Variance
AMI						
AMI Capital	$42,281	$70,443	($28,162)	$172,000	$281,677	($109,677)
Total AMI	**$42,281**	**$70,443**	**($28,162)**	**$172,000**	**$281,677**	**($109,677)**
Grand Total AMI	**$42,281**	**$70,443**	**($28,162)**	**$172,000**	**$281,677**	**($109,677)**

Customer Energy Solutions Capital Summary

Thousands ($000)

	March 2021 YTD			2021 Year-End		
Program Description	**Actuals**	**Budget**	**Variance**	**Target**	**Budget**	**Variance**
Demonstration Project	**$113**	**$1,494**	**($1,381)**	**$5,994**	**$3,153**	**$2,841**
DSPP	**$8,051**	**$9,321**	**($1,270)**	**$37,300**	**$37,300**	**$0**
Storage Program - Fox Hills	**$296**	**$5,189**	**($4,893)**	**$13,346**	**$21,024**	**($7,677)**
CES Electric Other	**$0**	**$1,250**	**($1,250)**	**$5,000**	**$5,000**	**$0**
Grand Total Customer Energy Solutions	**$8,460**	**$17,254**	**($8,794)**	**$61,640**	**$66,477**	**($4,836)**

Customer Energy Solutions Capital Programs & Projects

Thousands ($000)

	Mar 2021 YTD			2021 Year-End		
	Actuals	Budget	Variance	Target	Budget	Variance
Demonstration Project						
Demonstration Projects - Solar	$54	$0	$54	$56	$0	$56
Demonstration Projects - Storage on Demand	$59	$971	($912)	$4,539	$2,053	$2,486
Demonstration Projects - EV Make Ready	$0	$523	($523)	$1,399	$1,100	$299
Demonstration Project Total	**$113**	**$1,494**	**($1,381)**	**$5,994**	**$3,153**	**$2,841**
DSPP						
DERMS	$553	$700	($147)	$2,405	$2,800	($395)
GIS	$181	$0	$181	$0	$0	$0
DMAP	($200)	$417	($617)	$1,648	$1,667	($19)
DMTS	$477	$833	($356)	$3,313	$3,333	($20)
DRMS	$2,194	$1,200	$994	$4,802	$4,800	$2
Modernizing Protective Relays	$3,196	$3,150	$46	$12,599	$12,600	($1)
VVO	$1,447	$1,750	($303)	$6,916	$7,000	($84)
Other Distributed System Platform Projects	$203	$1,271	($1,068)	$5,616	$5,100	$516
DSPP Total	**$8,051**	**$9,321**	**($1,270)**	**$37,300**	**$37,300**	**$0**
Storage Program						
Storage Program - Fox Hills	$296	$5,189	($4,893)	$13,346	$21,024	($7,677)
Storage Program Total	**$296**	**$5,189**	**($4,893)**	**$13,346**	**$21,024**	**($7,677)**
CES Electric Other						
CES Emergent Regulatory Asset Capital Fund	$0	$1,250	($1,250)	$5,000	$5,000	$0
Total CES Electric Other	**$0**	**$1,250**	**($1,250)**	**$5,000**	**$5,000**	**$0**
Grand Total Customer Energy Solutions	**$8,460**	**$17,254**	**($8,794)**	**$61,640**	**$66,477**	**($4,836)**

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TAB 7

Shared Services & Common Capital Summary

Thousands ($000)

	March 2021 YTD			2021 Year-End		
Program Description	**Actuals**	**Budget**	**Variance**	**Target**	**Budget**	**Variance**
Common IT	**$56,944**	**$69,533**	**($12,589)**	**$304,358**	**$294,828**	**$9,530**
Common Facilities	**$28,439**	**$13,757**	**$14,681**	**$144,453**	**$142,506**	**$1,947**
Grand Total Shared Services & Common	**$85,383**	**$83,291**	**$2,092**	**$448,812**	**$437,334**	**$11,477**

Common IT Capital Programs & Projects

Thousands ($000)

	Actuals			Target		
Project/Program Description	**Actuals**	**Budget**	**Variance**	**Target**	**Budget**	**Variance**
Common IT						
Allegro Replacement	$159	$689	($529)	$2,040	$2,040	$0
AMI - Load Shedding Project	$548	$210	$338	$609	$350	$259
ARCOS SaaS Products (Workbench)	$754	$425	$329	$1,700	$1,700	$0
AutoCAD (Engineering Equipment Upgrade Program)	$74	$176	($102)	$706	$706	$0
Back Office Automation - Agent Tools	$0	$377	($377)	$612	$1,510	($898)
Budget System Enhancements	$269	$707	($438)	$2,828	$2,828	$0
Business System Sustainability Program	$24	$150	($126)	$1,100	$600	$500
CCTN Program	$1,869	$1,599	$270	$6,877	$6,877	$0
CDG Net Crediting and Payment Processing	$0	$236	($236)	$1,344	$944	$400
CE Bill Redesign	$154	$50	$104	$200	$200	$0
Communications Infrastructure (Grid Mod)	$4,103	$1,000	$3,103	$12,752	$12,752	$0
Conduct Maximo Upgrade Phase 0 and Project SSO	$0	$150	($150)	$0	$350	($350)
Conor Mobile Response Implementation	$356	$0	$356	$2,657	$0	$2,657
Construction - Fraud Risk Mitigation Program	$0	$15	($15)	$151	$151	$0
Construction - Survey Mapping Repository	$0	$26	($26)	$257	$257	$0
Construction Field Smart Forms 2018 -2022 (IT-KONY)	$272	$223	$48	$1,008	$552	$456
Construction Migration (Contractor Payment System Work Tracking)	$0	$102	($102)	$1,397	$1,397	$0
Contingency Analysis Program (CAP)	$21	$36	($15)	$65	$145	($80)
Corporate Security - Company Wide Camera Rollout Program	$187	$76	$112	$850	$850	$0
Corporate Security - Cyber forensic equipment	$23	$15	$8	$99	$99	$0
Corporate Security NVR and DVR replacements	$57	$75	($18)	$837	$837	$0
CPMS Customer Knowledge Self-Self Service	$108	$566	($458)	$2,265	$2,265	$0
Customer Operations Data Analytics	$1,382	$606	$776	$4,960	$3,775	$1,185
Customer Operations Journey Mapping	$166	$184	($18)	$736	$736	$0
Cyber Security and NERC Compliance	$270	$210	$61	$900	$900	$0
Cyber Security Infrastructure	$150	$425	($275)	$1,700	$1,700	$0
Cybersecurity	$1,090	$650	$440	$4,994	$4,994	$0
Data Center Improvements (Server Farm Infrastructure)	$317	$250	$67	$2,169	$2,169	$0
Datasplice Upgrade to Version 6	$85	$178	($93)	$277	$203	$74
Desktop Infrastructure	$6	$120	($114)	$482	$482	$0
Dielectric System Orders	$135	$105	$30	$420	$420	$0
Digital Customer Experience (DCX)	$2,692	$2,402	$290	$9,815	$9,815	$0
Distribution Electric Control Center Cybersecurity	$73	$90	($17)	$851	$851	($0)
Distribution Ops Training Simulator	$0	$29	($29)	$36	$116	($80)
District Operator Task Managing System	$52	$146	($95)	$604	$604	$0
E5	$156	$189	($33)	$688	$688	$0
EDAP-CVO	$237	$0	$237	$279	$0	$279
Electronic Stop Tag Application	$84	$0	$84	$266	$0	$266
Emerging IT Project Initiative for Enhanced Distribution System Analys	$0	$623	($623)	$5,000	$5,000	$0
Engage Platform Phase IV	$28	$0	$28	$198	$0	$198
Enterprise Application	$0	$70	($69)	$278	$278	$0
Enterprise PI Historian Platform	($36)	$0	($36)	$400	$0	$400
Enterprise Project Management Software Project	$996	$1,502	($506)	$4,530	$4,530	$0
FERC XBRL for filing FERC Forms	$0	$175	($175)	$700	$700	$0
Fiserv Payment Processing (ACH)	$132	$0	$132	$320	$0	$320
GIS Implementation	$4,200	$7,459	($3,259)	$29,999	$29,999	$0
Green Energy Program	$0	$525	($525)	$2,100	$2,100	$0
Grid Mod Data Analytics Use Cases	$503	$378	$125	$1,512	$1,512	$0
Implementation of TCIS Phase 0 Recommendations	$270	$350	($80)	$1,425	$350	$1,075

Common IT Capital Programs & Projects continued

	Actuals			Target		
Project/Program Description	**Actuals**	**Budget**	**Variance**	**Target**	**Budget**	**Variance**
Integrated Supply	$36	$528	($491)	$1,260	$1,260	$0
Mass Market Rate Reform (MMRR)	$0	$250	($250)	$0	$1,000	($1,000)
Mobility	$1,906	$2,076	($171)	$8,305	$8,305	$0
New Customer Service System	$20,848	$27,319	($6,470)	$105,590	$105,590	$0
New Technology	$0	$170	($170)	$680	$680	$0
NYISO Transmission Owner Data Reporting System Next Generation	($5)	$141	($146)	$374	$374	$0
Off System Billing	$348	$175	$173	$1,000	$700	$300
OMS IT System Hardening	$1,653	$1,420	$233	$5,792	$5,792	$0
Operations Network for EMS	($4)	$92	($96)	$255	$255	$0
Oracle BI for EBS Cloud Migration	$1,158	$857	$301	$5,027	$3,430	$1,597
Oracle HCM Cloud Implementation	$2,039	$4,422	($2,384)	$19,848	$19,848	$0
Outage Management System - Phase Four	$419	$439	($19)	$2,250	$2,250	$0
Outage Management System (OMS) Upgrade	$69	$0	$69	$174	$0	$174
Outage Scheduling System (OSS) - Phase 3	$476	$376	$100	$1,015	$840	$175
PeopleTools 858 Upgrade - Human Resources	$344	$0	$344	$340	$0	$340
PowerPlan Application Upgrade 2021	$0	$538	($538)	$2,150	$2,150	$0
ProField Encore (AMI Implementation)	$29	$56	($27)	$225	$225	$0
Rate Case Enhancements	$121	$269	($148)	$1,073	$1,073	$0
Scada Net	$64	$159	($96)	$638	$638	$0
_SP Information Technology - Various Stations	$7	$85	($78)	$340	$340	$0
Substation Technology Improvements Program (Maximo Upgrades)	$358	$0	$358	$1,438	$1,543	($105)
Technology Currency and Sustainability	$0	$0	$0	$3,000	$3,000	$0
Third Party Risk Management	$0	$833	($833)	$2,200	$2,200	$0
TNVS WEB	($14)	$35	($49)	$35	$35	$0
Virtual Assistants	$1,152	$742	$410	$3,751	$1,510	$2,241
Water Hammer Predictor Model	$5	$63	($58)	$252	$252	$0
WMS Sustainability Project	$267	$675	($408)	$2,700	$2,700	$0
Work and Asset Management Mobility Solution	$1,557	$1,306	$251	$5,225	$5,225	$0
XM10 Tier 1_2 Computer Equipment Critical Infrastructure	$1,249	$2,500	($1,251)	$10,000	$10,000	$0
XM8 Telecommunications Equipment Priority 1	$549	$300	$249	$2,426	$2,426	$0
2021 Electronic Feeder Sign On	$53	$53	($0)	$242	$242	$0
74th St and 59th St Station High Fidelity Simulators	$0	$85	($85)	$616	$1,616	($1,000)
Other IT Projects	$293	$0	$293	$149	$0	$149
Common IT Total	**$56,944**	**$69,533**	**($12,589)**	**$304,358**	**$294,828**	**$9,530**
Grand Total Common IT	**$56,944**	**$69,533**	**($12,589)**	**$304,358**	**$294,828**	**$9,530**

Common Facilities Capital Programs & Projects

Thousands ($000)

	Mar 2021 YTD			2021 Year-End		
Project/Program Description	**Actuals**	**Budget**	**Variance**	**Target**	**Budget**	**Variance**
Common Facilities						
4 Irving Place - Re-Stacking (Local Law 26)	$73	$0	$73	$22	$0	$22
Astoria Southwest Storm Water System Corrective Action Plan	$65	$82	($17)	$550	$901	($351)
Brinkerhoff Demolition	($314)	$0	($314)	$120	$0	$120
CET 4IP-23rd Floor Reconfiguration	($5)	$0	($5)	$0	$0	$0
Data Center Expansion - Server Farm	$131	$0	$131	$124	$0	$124
Facilities Buildings and Yards - (Energy Efficiency Program)	$1,977	$501	$1,476	$2,500	$2,006	$494
Facilities Buildings and Yards - (Roof Replacement Program)	$1,383	$752	$631	$3,000	$3,009	($9)
Facilities Buildings and Yards All Other (Safety Environmental Regulatory)	$2,746	$752	$1,993	$3,500	$3,009	$491
Facilities Critical Infrastructure Short Term Priority_Programs	$7,056	$1,497	$5,559	$14,725	$13,376	$1,349
Facilities Security Upgrade Program- Tier 1	$2,056	$624	$1,432	$2,050	$2,495	($445)
Facilities Service Center Renovations	$199	$752	($553)	$1,059	$3,009	($1,950)
Fleet Management Solution	$2	$0	$2	($6)	$0	($6)
McKeon Door Demolition	$1,190	$476	$714	$3,700	$558	$3,142
Post COVID Facilities Upgrades	$384	$423	($39)	$1,785	$1,622	$163
Sherman Creek Service Center	$45	$377	($332)	$63,500	$63,500	$0
Third Avenue New Transportation Building	$0	$246	($246)	$974	$974	$0
Van Nest Cable Office Renovation	$7	$1,248	($1,240)	$1,756	$5,001	($3,245)
Worth Street Site Master Plan	$45	$144	($100)	$800	$514	$286
XM 4 - Shop Equipment - Rollup	$34	$90	($56)	$360	$360	$0
XM1 Tier 1 - Office Furniture	$94	$168	($74)	$602	$602	$0
XM2 - Vehicles	$10,070	$4,147	$5,923	$34,400	$34,400	$0
XM3 Tier 1 - Stores Equipment	($5)	$47	($52)	$376	$376	$0
XM5 and 15 Tier 1 - Laboratory Equipment (Testing and Chemical)	$677	$336	$341	$3,460	$2,580	$880
XM6 Tier 1 - Tools and Work Equipment	$417	$897	($480)	$4,322	$3,440	$882
XM7 Tier 1 - Miscellaneous and Safety Equipment	$112	$198	($86)	$774	$774	$0
Common Facilities Total	**$28,439**	**$13,757**	**$14,681**	**$144,453**	**$142,506**	**$1,947**
Grand Total Common Facilities	**$28,439**	**$13,757**	**$14,681**	**$144,453**	**$142,506**	**$1,947**

Back to ToC

TAB 8

X	Capital
	O&M

2019 – Customer Operations

Project/Program Title	FISERV Payment Processing (ACH)
Project Manager	
Hyperion Project Number	
Status of Project	Awaiting Funding
Estimated Start Date	August 1, 2019
Estimated Completion Date	May 31, 2020
Work Plan Category	Operationally Required

Work Description:

Consolidated Edison, Inc offers electronic bill payments to all of its customers through multiple mediums, including IVR, Kiosk, Direct Payment, Internet, and Customer Service Representatives. There is a business need to replace the unsupported legacy software ClearTran (Intell-A-Check). The work involves a coordinated effort between various stakeholders. The effort requires the development of APIs to connect to Fiserv services for ACH payment processing. Once the APIs are developed, tested and available then each source system looking to make payments will be required to inegrate with these new payment APIs for ACH processing. The systems in scope include IVR, Desktop, Kiosk, and DCX. The team will also be responsible for end-to-end testing and coordination of various vendors managing each source system technology (Fiserv, Nuance, NCR).

See Attached work description for additional details.

Justification Summary:

All electronic bill payments for Consolidated Edison, Inc flow through the ClearTran system (Intell-A-Check). Recently, the company has been notified by ClearTran, a subsidiary of Bank of New York, that the currently implemented version of ClearTran will no longer be supported. Consolidated Edison has a replacement system provided by their competivley bid payment processing provider Fiserv. The fee for integration for ACH payments through Fiserv has been waived and only internal development and cost are needed to replace this legacy system. This replacement is necessary as having an unsupported system that processes approximately 12 million ACH transactions annually, amounting to an estimated $3.5 billion in payments.

Supplemental Information:

- Alternatives:

Alternative is to remain on unsupported payment processing technology for ACH at great risk of system failure impacting company revenue.

- Risk of No Action:

Rick of no action means accepting risk of system failure that is responsible for processing approximately 12 million ACH transactions annually, amounting to an estimated $3.5 billion in payments.

- Non-financial Benefits:

The integration to a current payment processing partner will enabe the company to develop additional payment options for customers, such as: Wallet Feature and Text to Pay. Additionally, this vendor will support and develop their platform to meet customer changing needs around payment, allowing the Company to utilize additional options and services.

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

Fiserv is offering integration work for ACH payment at no cost to the Company.

- Technical Evaluation/Analysis:

A review has been completed with all impacted systems with SMEs in order to provide high-level scope and effort. See attached documentation.

- Project Relationships (if applicable):

Digital Customer Experience

- Basis for Estimate:

A review has been completed with all impacted systems with SMEs in order to provide high-level scope and effort. See attached documentation.

Future Elements of Capital Expense ($000):

EOE	Budget 2019	Request 2020	Request 2021	Request 2022	Request 2023
Labor	500,000	1,340,000			
M&S					
A/P					
Other					
Overheads					
Total					

Business Unit / Division
Budget Year

1. Project / Program Summary

Type: ☒ Project ☐ Program	**Category: ☒ Capital ☐ O&M**
Work Plan Category: ☐ Regulatory Mandated ☐ Operationally Required ☒ Strategic	
Project/Program Title: Conor Mobile Response Implementation	
Project/Program Manager: Lionel Ing	**Project/Program Number (Level 1):**
Status: ☒ Initiation ☒ Planning ☒ Execution ☐ On-going ☐ ☐ Other: _____	
Estimated Start Date: 12/1/20	**Estimated Date In Service: 12/1/21**
A. Total Funding Request ($000) **Capital: $2,867,200** **O&M: 100,000**	**B.** **☐ 5-Year Gross Cost Savings ($000)** **☐ 5-Year Gross Cost Avoidance ($000)** **O&M:** **Capital:**
C. 5-Year Ongoing Maintenance Expense ($000) **O&M:** **Capital:**	**D. Investment Payback Period: (Years/months) (If applicable)**

Work Description:
Give a brief description (no less than a paragraph) of the work to be completed and its locations. Include the following:

- Con Edison and O&R seek to deliver an enhanced mobile experience for field and management employees allowing access to Conor from a mobile device. Conor is currently housed in SharePoint 2016 on-premise. We will leverage the SharePoint Online and Microsoft 365 platform, which currently hosts other CECONY collaboration sites to move Conor from its on-premise location to the cloud. We plan to leverage Con Edison's existing authentication model, enabling employees to access pertinent information from their personal devices using their Con Edison network credentials. All links to on-premise applications like HR Payroll, Oracle, and TLC Training Portal, will be removed from the mobile experience and not available on a mobile or external device, ensuring employees do not encounter broken links. Employees will continue to use CEVO or their company laptops to log into on-premise applications.

Justification Summary:
Provide justification of why the project/program should be done. ***Give a detailed description of the situation background and work to be completed.*** *If it is a primary driver for doing the work, include a discussion of the ERM addressed by the project or program. Be sure to include financial and non-financial benefits.*

- Even before the pandemic restrictions, Con Edison and O&R field employees were not able to directly access information, tools and news available on Conor. Instead, they rely on supervisors to provide information via briefings and printed hand-outs. The landscape of how we work has changed dramatically in recent months. With most employees working remotely for the forseeable future, the challenge to keep them informed is more difficult. There is a pressing need to ensure that our employees receive vital company information.

- Our existing approach to remote access via CEVO presents a sub-optimal employee experience because not all employees have a company device, CEVO oftentimes is not a reliable way to access Conor information, and shared kiosk workstations and toughbooks are touchpoints that present a health concern for field employees as we navigate through COVID response and re-entry.

- Following the principles of the Agile methodology, in 2018, the minimum viable product (MVP) of Conor was implemented for use on company desktops. By design, the MVP contained the foundation necessary to create a mobile responsive experience for Conor.

- In 2018, Con Edison and O&R completed the intranet redesign effort for an in-network desktop experience. Conor is built on SharePoint and provides employees with a familiar and seamless experience for accessing vital information. Mobile accessibility was not in scope for this effort, but the foundation exists to continue to build upon this redesign and empower employees to effortlessly access the information they need to get their work done.

- As a part of the MVP Conor project, the team conducted discovery workshops with employees representing a cross-section of business units, organizational tenure, level, digital aptitude, and leadership. The team created four personas, which brought to life the motivations, behaviors, interactions, needs, and goals of typical intranet users. The personas were used from design to rollout, matching features to personas to make decisions about visual layout, information architecture, backlog priorities, and security and permissions. The personas included a management employee accessing Conor from a desktop, a field employee, a new employee and a content author.

- During the aforementioned discovery workshops, several pain points specific to field employees were identified: broken kiosks, long lines to use kiosks before or after their shift, not wanting other employees to see PII or pay information via a shared computer, reliance on a shift manager to print off time-sensitive communications and distribute to a team at the start of each shift.

- With new remote work arrangements, pain points for management employees include: the increased expectation to remain connected off-hours, access to information pertinent to family support, access to news articles outside of working hours, access to information such as the holiday schedule to plan their lives accordingly.

- Both field and management employees expressed frustration at access and performance issues when using CEVO/CERA as well as accessing the intranet on a company issued device.

Relationship to 5-Year and Long-Range Plans and Enterprise Risk Management Strategy
Explain how this project/program will help achieve goals in 5-year and long-range plans.
Explain how this project/program addresses risk mitigation activity. List specific departmental and/or corporate risk being impacted.

We would like to provide a friction-free communications channel for all employees (field and management). Our new normal is distributed, remote work. We need to focus on ease of access to pertinent information, and retention of talent in the long term.

2. Supplemental Information

Alternatives
Briefly describe reasonable alternatives and reason for rejection (e.g., costs, timing, etc.). ***At least one is required.***

Alternative 1 description and reason for rejection

- **The employee intranet will continue to function in its current form with existing challenges on how our employees receive timely communications and information. New stresses on this current method will continue to arise as we move forward into the realm of long-term remote work. Employees must continue to remotely access Conor via CEVO or a company desktop.**

Risk of No Action

Give the consequences, including enterprise risks that might arise by not doing the project/ program. Quantify the risks, if applicable.

Risk 1

- **The employee intranet will continue to function in its current form with existing challenges. Employees must continue to remotely access Conor via CEVO or a company device with existing challenges.**

Risk 2

- **Employee retention, attraction, and development of talent if not addressed.**

Risk 3

- **Health and safety of field workers where there are not enough company devices for all – shared kiosks and toughbooks.**
- **Health and safety of field workers in ensuring pertinent information reaches them in a timely manner.**
- **Confidential information remains secure in Conor space, accessible through your personal device after multi-factor authenitication. Mitigates risk of shared computer logins, printed materials not being destroyed properly.**

Risk 4

- **Poor channels for communication and obsolete infrastructure becoming obstacles to achieving operational or strategic objectives. Misalignment of communicating to employees.**

Non-Financial Benefits

Examples:

- *Increased safety, reliability, efficiency, or customer satisfaction*
- *Improved workflows and communication among departments*
- *Stronger relationships with community or with regulators*
- *Ensuring regulatory compliance*

- **Increased safety of workforce (field and management) in ensuring access to time-sensitive communications**
- **Increased efficiency of workforce (field and management) in ensuring employees are empowered with the tools they need to access and exchange information in a timely manner**
- **Increased reliability of workforce (field and management) in ensuring we are providing a clear and easy platform for rapid communications and information**
- **Improved workflows and communication amongst all departments in accessing information housed on Conor.**
- **Improved access to vital information as it pertains to the employee and employee's family (benefits/holiday schedule)**
- **Ensuring compliance by providing employees with multiple channels to access information**

- **Opportunities to align with IT future plans to migrate to Office 365 points if we are going this route – Integration of applications currently existing in our suite with our existing license for an optimized employee experience.**
- **This helps talent retention and communications overall (stream, teams, planner, yammer, power bi, one drive)**
- **By leveraging Con Edison's O365 setup, upgrades and patches maintenance is performed by Microsoft.**

Summary of Financial Benefits and Costs (attach backup)

1. Cost-benefit analysis (if required)

To perform financial analysis on the project or program: Refer to Corporate Instruction 291-1 "Cost-Benefit Analysis (CBA) Guidelines" to determine cost avoidance or cost savings potential. Also, refer to "Estimating Cost Contingency" Guidelines and "Estimating Escalation Cost" Guidelines, both of which are available on the Project Management Society page on the Con Edison intranet site under the Project Manager's Toolkit menu. Attach data (e.g. estimates and quotes from vendors, model outputs) as needed.

2. Major financial benefits

Explain major benefits (e.g., revenue increase, cost avoidance) and demonstrate these benefits using financial metrics (e.g., net present value, internal rate of return, breakeven point, payback period) as calculated according to the CBA guidelines. If project/program results in cost savings identify the owning cost center (Organization) that will realize the savings and whether the savings are labor or non-labor. If non-labor include the expected FTE reduction and the baseline FTEs utilized for the assessment.

3. Total cost

State the total project/program implementation cost (which should match the detailed funding breakdown below), along with any on-going financial costs associated with the project/program. For software projects, segregate costs by each phase of development: feasibility, design, development, and production/implementation.

4. Basis for estimate

Explain the method used to create the estimate. Include all key assumptions.

5. Conclusion

Should the project be done at all? Does it make sense to spend additional dollars to continue the project? Justify.

Project Risks and Mitigation Plan

Evaluate and describe any risks that might extend the project timeline, prevent completion, or lead to cost overruns. Explain plan to minimize these risks.

Risk 1: Availability of employee stakeholders to engage in workshops and discovery processes

Mitigation plan: Flexibility in meeting with employee stakeholders

Technical Evaluation / Analysis

Describe any specific studies or analysis related to the project such as: trend analysis, internal/external studies, social studies, and related KPI's (e.g. System Average Interruption Frequency Index (SAIFI) or Customer Average Interruption Duration Index (CAIDI)). Load forecasts, failure trends, etc., may also be presented in this section. However, these analyses are not available for all projects or programs.

We will leverage the ADFS (single sign-on) setup used by employees to access O365. This provides a accepted and secure authentication process for future Conor Mobile users.

We will modify cascading style sheets to format and reconfigure page presentation to fit mobile device screens.

Conor was written in AngularJS per guideline from Microsoft for on-premise SharePoint 2016 environments. Along with moving Conor to O365, we will convert code created in AngularJS to Angular. This is in line with Microsoft's support philosophy for O365 SharePoint applications.

Project Relationships (if applicable)
Explain whether this project/program will impact other projects/programs. Some projects must be done together due to outages, or one project may depend on another (e.g. Mohansic/Buchanan projects or movement of distribution work due to Substation service date change).

3. Funding Detail

Historical Spend

	Actual 2016	**Actual 2017**	**Actual 2018**	**Actual 2019**	**Historic Year** (O&M only)	**Forecast 2020**
Capital						
O&M						

Total Request ($000):

Total Request by Year:

	Request 2020	**Request 2021**	**Request 2022**	**Request 2023**	**Request 2024**
Capital	**$207,200**	**$2,660,000**			
O&M*		**$100,000**			

Capital Request by Elements of Expense:

EOE	**2020**	**2021**	**2022**	**2023**	**2024**
Labor	**X**	**X**			
M&S	**X**	**X**			
Contract Services	**$185,000**	**$2,375,000**			
Other	**X**	**X**			
Overheads	**22,200**	**285,000**			
Total	**$207,200**	**$2,660,000**			

Total Gross Cost Savings / Avoidance by Year:

	2021	2022	2023	2024	2025
O&M Savings					
O&M Avoidance					
Capital Savings					
Capital Avoidance					

Total Ongoing Maintenance Expense by Year:

	2021	2022	2023	2024	2025
O&M					
Capital					

*If whitepaper is supporting a capital project/program this refers to implementation O&M

4. Definitions

Total Funding Request: All funding requested for program or project over program/project lifecycle or for on-going programs the five-year requested amount, including all capital, O&M, retirement.

Cost Savings: Reductions in costs that are currently being incurred (e.g., reduced annual maintenance cost relative to today)

Cost Avoidance: Reductions in anticipated future costs that don't occur today (e.g., anticipated short-term fixes/maintenance if capital isn't deployed)

Project Status:

- Initiation – New project, not authorized yet
- Planning – Project authorized, not started yet
- Executing – Project in-flight
- On-going – Annual program

Business Unit / Division
Budget Year

1. Project / Program Summary

Type: ☒ Project ☐ Program	**Category: ☒ Capital ☐ O&M**
Work Plan Category: ☐ Regulatory Mandated ☐ Operationally Required ☐ Strategic	
Project/Program Title: EDAP CVO	
Project/Program Manager: Tom Langlois	**Project/Program Number (Level 1):**
Status: ☒ Initiation ☒ Planning ☒ Execution ☐ On-going ☐ ☐ Other: _____	
Estimated Start Date: 6/15/2020	**Estimated Date In Service: 1/31/2021**
A. Total Funding Request ($000) **Capital: $927,800** **O&M: $301,350**	**B.** **☐ 5-Year Gross Cost Savings ($000)** **☐ 5-Year Gross Cost Avoidance ($000)** **O&M:** **Capital:**
C. 5-Year Ongoing Maintenance Expense ($000) **O&M:$345,000** **Capital:**	**D. Investment Payback Period: (Years/months) (If applicable)**

Work Description:
Give a brief description (no less than a paragraph) of the work to be completed and its locations. Include the following:

- *Objectives of the work*
- *Describe units per year and unit costs, if applicable and for identified work.*
- *Justify the Work Plan Categorization and specify whether the work is part of a PCS order/audit.*
- *High-level schedule.*

Con Edison would like to replace existing manual Tableau based CVO data analysis and benefits analysis with a new self-service application on the C3 platform. This project will involve two new software integrations, one to STAR and one to PI, that will expand the platform's capability to deliver value to electric and customer energy solutions. The new functionality added to the platform will deliver great value.

Justification Summary:
Provide justification of why the project/program should be done. ***Give a detailed description of the situation background and work to be completed.*** *If it is a primary driver for doing the work, include a discussion of the ERM addressed by the project or program. Be sure to include financial and non-financial benefits.*

Having this system enables us to more aggressively pursue CVO which there are significant environmental savings in CO2 emission reductions and fuel savings. With the implementation of AMI and its impact of CVO, the Company estimates a $346M NPV cost savings for the 20-year BCA analysis, of which $292M is due to fuel savings and $54M is CO2 reductions.

The core integrations being delivered will enable future capabilities to the platform as well. The C3 vendor will perform creation of the application and update of their platform to enable this, the Con Edison ACE IT team will lead the integration work and the AMI business team will help develop and test this new enhanced functionality.

Relationship to 5-Year and Long-Range Plans and Enterprise Risk Management Strategy
Explain how this project/program will help achieve goals in 5-year and long-range plans.
Explain how this project/program addresses risk mitigation activity. List specific departmental and/or corporate risk being impacted.

The application will help leverage AMI voltage data for area station and 4KV station load to help visualize and provide visibility into the customer voltages to help operators optimize each station's operating voltage schedule. The tool will implement immediate benefit for the CVO program. Project will help address risk mitigation by providing accurate voltage of customers that will help guide what the correct station voltage should be set to avoid high and or low customer voltage.

2. Supplemental Information

Alternatives
Briefly describe reasonable alternatives and reason for rejection (e.g., costs, timing, etc.). ***At least one is required.***

Alternative 1 description and reason for rejection

In house custom build software using Tableau or an IT in house build software. Using Tableau is not a long-term solution and has to be managed locally and restricted by the Tableau requirements. In addition, there is no IT resources available to support this project due to other pending work scheduled.

Alternative 2 description and reason for rejection

Alternative 3 description and reason for rejection

Risk of No Action
Give the consequences, including enterprise risks that might arise by not doing the project/ program. Quantify the risks, if applicable.

Risk 1

Corporate Risk – Strong
CVO is the third largest customer and company benefit listed in the AMI Business Plan. Without this tool we are risking not meeting the criteria in the AMI Business Plan. Currently we are using a Tableau software that pulls voltage information for the AMI meters. It is very time consuming and publishing

the workbook does not work at the moment. By not doing this project, we are limited and relying on a short term solution that has the risk of failing and not allowing us to extract the AMI data for the customers.

Risk 2

Department Risk -Strong
Currently we are using a Tableau software that pulls voltage information for the AMI meters. It is very time consuming and publishing the workbook does not work at the moment. By not doing this project, we are limited and relying on a short term solution that has the risk of failing and not allowing us to extract the AMI data for the customers. If we do not have the visibility into the meters then we have the risk of leaving customers in a CVO % and causing undesirable low /high voltage customer voltage. Each region manages their area's station voltage. Without the visibility of customer voltage, the region will not know how to properly optimize the station for the region.

Risk 3

Non-Financial Benefits
Examples:

- *Increased safety, reliability, efficiency, or customer satisfaction*
- *Improved workflows and communication among departments*
- *Stronger relationships with community or with regulators*
- *Ensuring regulatory compliance*

This project aims to improve customer experience across its new platform. The new application will improve internal and external customer experience. Internal customers will have ability to review customer voltages and make operational decisions to improve the system and allowing Con Edison to reach its CVO goals. The platform will increase our reliability by having an insight into potential trouble area pockets and allowing the company to proactive address any pockets of concerns. Additionally this tool will help reach out efficiency goals with the implementation of CVO which also ensures we meet our regulatory compliance.

Summary of Financial Benefits and Costs (attach backup)
1. Cost-benefit analysis (if required)
To perform financial analysis on the project or program: Refer to Corporate Instruction 291-1 "Cost-Benefit Analysis (CBA) Guidelines" to determine cost avoidance or cost savings potential. Also, refer to "Estimating Cost Contingency" Guidelines and "Estimating Escalation Cost" Guidelines, both of which are available on the Project Management Society page on the Con Edison intranet site under the Project Manager's Toolkit menu. Attach data (e.g. estimates and quotes from vendors, model outputs) as needed.

2. Major financial benefits

Explain major benefits (e.g., revenue increase, cost avoidance) and demonstrate these benefits using financial metrics (e.g., net present value, internal rate of return, breakeven point, payback period) as calculated according to the CBA guidelines. If project/program results in cost savings identify the owning cost center (Organization) that will realize the savings and whether the savings are labor or non-labor. If non-labor include the expected FTE reduction and the baseline FTEs utilized for the assessment.

3. Total cost
State the total project/program implementation cost (which should match the detailed funding breakdown below), along with any on-going financial costs associated with the project/program. For software projects, segregate costs by each phase of development: feasibility, design, development, and production/implementation.

4. Basis for estimate
Explain the method used to create the estimate. Include all key assumptions.

5. Conclusion
Should the project be done at all? Does it make sense to spend additional dollars to continue the project? Justify.

Project Risks and Mitigation Plan
Evaluate and describe any risks that might extend the project timeline, prevent completion, or lead to cost overruns. Explain plan to minimize these risks.

Risk 1	Mitigation plan
Potential risk of overrun into 2021. This might occur if Con Edison does not provide the data the vendor needs by a certain requested date. This can be avoided by having a full time staff assigned to the project to ensure all the data is delivered by the requested timeline.	
Risk 2	Mitigation plan

Technical Evaluation / Analysis
Describe any specific studies or analysis related to the project such as: trend analysis, internal/external studies, social studies, and related KPI's (e.g. System Average Interruption Frequency Index (SAIFI) or Customer Average Interruption Duration Index (CAIDI)). Load forecasts, failure trends, etc., may also be presented in this section. However, these analyses are not available for all projects or programs.

Project Relationships (if applicable)
Explain whether this project/program will impact other projects/programs. Some projects must be done together due to outages, or one project may depend on another (e.g. Mohansic/Buchanan projects or movement of distribution work due to Substation service date change).

3. Funding Detail

Historical Spend

	Actual 2016	Actual 2017	Actual 2018	Actual 2019	Historic Year (O&M only)	Forecast 2020
Capital						

O&M						

Total Request ($000):

Total Request by Year:

	Request 2021	Request 2022	Request 2023	Request 2024	Request 2025
Capital					
O&M*					

Capital Request by Elements of Expense:

EOE	2021	2022	2023	2024	2025
Labor					
M&S					
Contract Services					
Other					
Overheads					
Total					

Total Gross Cost Savings / Avoidance by Year:

	2021	2022	2023	2024	2025
O&M Savings					
O&M Avoidance					
Capital Savings					
Capital Avoidance					

Total Ongoing Maintenance Expense by Year:

	2021	2022	2023	2024	2025
O&M					
Capital					

*If whitepaper is supporting a capital project/program this refers to implementation O&M

4. Definitions

Total Funding Request: All funding requested for program or project over program/project lifecycle or for on-going programs the five-year requested amount, including all capital, O&M, retirement.

Cost Savings: Reductions in costs that are currently being incurred (e.g., reduced annual maintenance cost relative to today)

Cost Avoidance: Reductions in anticipated future costs that don't occur today (e.g., anticipated short-term fixes/maintenance if capital isn't deployed)

Project Status:

- Initiation – New project, not authorized yet
- Planning – Project authorized, not started yet
- Executing – Project in-flight
- On-going – Annual program

Business Unit / Division
Budget Year

1. Project / Program Summary

Type: ☒ Project ☐ Program	**Category: ☒ Capital ☐ O&M**
Work Plan Category: ☐ Regulatory Mandated ☒ Operationally Required ☐ Strategic	
Project/Program Title: Engage Platform Phase IV	
Project/Program Manager: Joachim Gomes	**Project/Program Number (Level 1):**
Status: ☐ Initiation ☐ Planning ☒ Execution ☐ On-going ☐ ☐ Other: _____	
Estimated Start Date: 11/01/2018	**Estimated Date In Service: 12/31/2020**
A. Total Funding Request ($000) **Capital: 1,231,000** **O&M:**	**B.** **☐ 5-Year Gross Cost Savings ($000)** **☐ 5-Year Gross Cost Avoidance ($000)** **O&M:** **Capital:**
C. 5-Year Ongoing Maintenance Expense ($000) **O&M:** **Capital:**	**D. Investment Payback Period:** **(Years/months) (If applicable)**
Work Description: **The scope of work involves the development of new applications to support the project planning process, implementation of mobile data collection solutions, and incorporation of automation and machine learning into the work management process. The software development will create new functionality which will reside in the Engage platform and on a separate scheduling optimization server. Additional servers will be purchased and installed to support the increased use of mobile devices using the platform.**	
Justification Summary: **The Engage platform is being utilized to address deficiencies in asset and work management processes that at this time cannot be fulfilled by enterprise systems such as Maximo. The majority of functionality being created is to support management of Central Engineering work, implementation of mobile solutions, and automation of work planning, scheduling, and assignment. The benefits of this new functionality will lower costs and these savings are part of the BCO initiative. This will enable the system to meet the business needs, extend the useable life of the platform, and provide new functionality that has been requested.**	
Relationship to 5-Year and Long-Range Plans and Enterprise Risk Management Strategy **This project addresses near term objectives related to the lack of automation and mobile tools for Central Operations. Another project titled "Transition Engage to Maximo" is proposed to align with IT goals of using enterprise solutions and leveraging automation and technology to lower business costs. This work is necessary to achieve savings now until such time that functionality in other enterprise systems is created or configured to replace functionality in Engage. This project will help us streamline processes and implement automation that can then be leveraged by the long-term enterprise solution.**	

2. Supplemental Information

Alternatives

Briefly describe reasonable alternatives and reason for rejection (e.g., costs, timing, etc.). ***At least one is required.***

Alternative 1 description and reason for rejection

An alternative would be to do nothing. The reason for rejecting this alternative is because current enterprise solutions are either not configured or cannot provide all the functionality required by the business. Implementing this project will result in immediate costs savings for the business users while enabling the organization to make a successful gradual transition to enterprise solutions when they are capable of satisfying business requirements.

Alternative 2 description and reason for rejection

Alternative 3 description and reason for rejection

Risk of No Action

Give the consequences, including enterprise risks that might arise by not doing the project/ program. Quantify the risks, if applicable.

Risk 1

This project is currently in-flight. Risk of no action is that portions of functionality already in use would be unsupported as they were developed using an agile approach and not fully complete. In addition, we would be unable to complete the automated scheduling model which is new technology that can have a significant impact on the cost of maintenance. This would be a missed opportunity and would result in stranded costs as the work could not easily be restarted at a later date.

Risk 2

Risk 3

Non-Financial Benefits

Examples:

- Improved reliability due to better asset and work management software tools.
- Improved employee development through the auto-assign features of the automation.
- Better coordination of work between Central Engineering and its customers.
- Promotion of technology through mobile computing and automation.

Summary of Financial Benefits and Costs (attach backup)

1. Cost-benefit analysis (if required)

A cost-benefit analysis has not been performed.

2. Major financial benefits

- Automation of scheduling and work assignment will result in the reduction of approximately 5 FTE in Substation Operations.
- Implementation of mobile computing including electronic job briefings should provide an increase in productivity of 2-5% once fully implemented in Substation Operations
- Implementation of a work management system for Central Engineering will result in at least a 10% productivity improvement within the next 5 years based on industry studies of the impacts of the use of work management systems on organizations.

3. Total cost

The total cost to complete this project in 2020 is $1,231,000.

4. Basis for estimate

The estimated cost is based on current purchase orders and vendor quotes. There is a high degree of confidence in the cost estimate.

5. Conclusion

The project should be done. It will enable business continuity and process improvements while the organization investigates alternative enterprise solutions where feasible. This project provides financial benefits that are greater than the cost of the project.

Project Risks and Mitigation Plan

Evaluate and describe any risks that might extend the project timeline, prevent completion, or lead to cost overruns. Explain plan to minimize these risks.

Risk 1

The schedule automation doesn't work as intended.

Mitigation plan

Additional work may be required to modify the scheduling tool to function properly. The code is written in Python and training for in-house personnel is planned to enable us to modify the optimization code.

Risk 2 Mitigation plan

Technical Evaluation / Analysis

None

Project Relationships (if applicable)
None

3. Funding Detail

Historical Spend

	Actual 2016	**Actual 2017**	**Actual 2018**	**Actual 2019**	**Historic Year** (O&M only)	**Forecast 2020**
Capital			**$4,000**	**$562,000**		**$1,231,000**
O&M						

Total Request ($000):

Total Request by Year:

	Request 2021	**Request 2022**	**Request 2023**	**Request 2024**	**Request 2025**
Capital					
O&M*					

Capital Request by Elements of Expense:

EOE	**2021**	**2022**	**2023**	**2024**	**2025**
Labor					
M&S					
Contract Services					
Other					
Overheads					
Total					

Total Gross Cost Savings / Avoidance by Year:

	2021	**2022**	**2023**	**2024**	**2025**
O&M Savings					
O&M Avoidance					
Capital Savings					
Capital Avoidance					

Total Ongoing Maintenance Expense by Year:

	2021	**2022**	**2023**	**2024**	**2025**
O&M					
Capital					

*If whitepaper is supporting a capital project/program this refers to implementation O&M

4. Definitions

Total Funding Request: All funding requested for program or project over program/project lifecycle or for on-going programs the five-year requested amount, including all capital, O&M, retirement.

Cost Savings: Reductions in costs that are currently being incurred (e.g., reduced annual maintenance cost relative to today)

Cost Avoidance: Reductions in anticipated future costs that don't occur today (e.g., anticipated short-term fixes/maintenance if capital isn't deployed)

Project Status:

- Initiation – New project, not authorized yet
- Planning – Project authorized, not started yet
- Executing – Project in-flight
- On-going – Annual program

Electric, Gas, and Steam / Across all divisions
2020-2021

1. Project / Program Summary

Type: ☒ **Project** ☐ **Program**	**Category:** ☒ **Capital** ☒ **O&M**
Work Plan Category: ☐ **Regulatory Mandated** ☒ **Operationally Required** ☐ **Strategic**	
Project/Program Title: **Enterprise PI Historian Platform**	
Project/Program Manager: Nariman Nasseri	**Project/Program Number (Level 1):**
Status: ☐ **Initiation** ☐ **Planning** ☒ **Execution** ☐ **On-going** ☐ ☐ **Other:** _____	
Estimated Start Date: 2020	**Estimated Date In Service:** 2021
A. Total Funding Request ($12,603,200) **Capital**: $9,603,200 **O&M:** $3,000,000	**B.** ☒ **5-Year Gross Cost Savings ($000)** $1,200,000 ☒ **5-Year Gross Cost Avoidance ($000)** **O&M:** $600,000 **Capital: new purchase:** $8,000,000
C. 5-Year Ongoing Maintenance Expense ($3,950,000) **O&M:** $3,950,000 **Capital:**	**D. Investment Payback Period:** 5 **(Years/months) (If applicable)**

Work Description:

Con Edison has been utilizing OSISoft's PI System for more than 20 years for the real-time monitoring and visualization of critical operations in Electric, Gas and Steam. The list below highlights the extensive use of PI by the various groups within Con Edison that utilize OSISoft's PI System to monitor various systems and make critical time sensitive decisions each and every day.

- Electric Transmission (ECC and AECC)
- Electric Distribution (HQ & 5 boroughs)
- Gas System Planning & Operations
- Gas Engineering Transmission
- Steam Plants (East River, West 59th Street, East 60th Street, 74th Street)
- Steam Business Unit @ HQ
- Engineering Operations
- Substation Engineering
- Substation Operations/Maintenance
- Transmission Planning
- Central Operations – Asset Management
- Westchester Electric Operations
- O&R Electric and Gas Operations

The Company has purchase PI software (PI Servers, additional PI tags, PI Interfaces & PI Clients) and PI Services (new PI Server installations, PI System upgrades and training) on a project-by-project basis, and have spent ~ $10M over just the past 7 years on new PI software, PI Services and for 24/7/365 PI Tech Support. As an alternative to continuing to purchase PI software on a project-by-project basis,

which is very inefficient, time consuming and not very cost effective, the Company will implement an enterprise PI platform with IT that will serve the entire company.

Under this project, the Company will implement a centralized enterprise software platform managed by IT that will support operations across electric, gas and steam. The company will secure enterprise licenses that will allow us to deploy and/or upgrade PI technology in an unlimited manner, without counting of data streams/tags, PI Interfaces, PI Client licenses, etc. Con Edison will benefit from the pro-active support and services provided by OSISoft to ensure that we maximize our use of the PI technology to accelerate company-wide process efficiencies and operational intelligence. OSISoft will work with Con Edison to construct an Enterprise Roadmap for PI implementation.

Below section lists the anticipated implementations of the various Con Edison groups for year 1 and 2.

Justification Summary:

The project has three major components:

EA software – provides unlimited use of the PI software (i.e. – unlimited PI Servers for Production /Testing/Development, unlimited use of High Availability PI, unlimited # of tags, unlimited PI interfaces /connectors, & unlimited PI Clients (PI Vision, ProcessBook, DataLink, Manual Logger) throughout Con Edison.

Enterprise SRP (ESRP) - proactive PI Enterprise Services and Support provided to only Enterprise Customers, by the PI Experts at OSISoft. This includes new PI installs, existing PI System upgrades, training, workshops, PI Visualization Suite, and High Availability. High Availability (HA) add-on will provide dynamic failover and redundant reliability that ensures continuous collection, storage, and availability of our data for sites that currently do not have HA PI systems.

EA hardware – deploy new hardware to support high availability architecture

Planned Implementations:

Electric Control Center:

- Convert 2 of 3 PI servers to High Availability (HA) PI (mirrored PI Servers – Primary/Secondary with auto failover)
- Increase tag count on all 3 PI Servers to unlimited license (999,999 tags)
- Implement PI Visualization Suite (unlimited PI Vision, PI ProcessBook and PI DataLink (MS Excel add-in) user licenses)
- Implement new PI Vision Web Server
- Add Mobile Control Center PI Servers
- Implement PI AF, PI Analytics and PI Notifications
- PI AF Workshop
- PI Vision Workshop/Training

Electric Distribution:

- Convert new OMS PI server to High Availability (HA) PI (mirrored PI Servers – Primary/Secondary with auto failover)
- Increase PI tag count on OMS PI Server to unlimited (999,999 tags)
- Increase PI tag license from 1.5M tags to unlimited (999,999 tags)

- Implement additional PI Interfaces and PI Connectors (i.e. – PI DNP3, PI Modbus Ethernet, PI OPC DA)
- Implement PI Visualization Suite (unlimited PI Vision, PI ProcessBook and PI DataLink (MS Excel add-in) user licenses)

Distribution Control Center:

- Convert existing 2 PI servers to High Availability (HA) PI (mirrored PI Servers – Primary/Secondary with auto failover)
- Increase PI tag license from 1M tags to unlimited (999,999 tags)

Steam Plants:

- Convert all Steam Plant PI servers to High Availability PI (mirrored PI Servers – Primary/Secondary with auto failover)
- Increase tag count to unlimited (999,999 tags)
- Implement PSA on all the Steam PI Servers - PI Server Access (PSA) toolkit for sending PI data to Maximo to facilitate Condition-based Maintenance (CBM) Program at the Steam Plants
- Implement PI Visualization Suite (unlimited PI Vision, PI ProcessBook and PI DataLink (MS Excel add-in) user licenses)
- Implement PI AF, PI Analytics and PI Notifications
- PI AF Workshop
- PI Vision Workshop/Training

Steam BU:

- Increase tag count on 2 PI Servers from 10k tags to unlimited (999,999 tags)
- Convert both PI servers to High Availability (HA) PI (mirrored PI Servers – Primary/Secondary with auto failover)
- PI Visualization Suite (provides unlimited use of PI Vision, PI ProcessBook, PI DataLink and PI Manual Logger)
- PI AF Workshop
- PI Vision Workshop/Training

Gas Control Center:

- Increase tag count on 2 PI Servers to unlimited (999,999 tags)
- Implement PSA on all the PI Servers - PI Server Access (PSA) toolkit for sending PI data to Maximo to facilitate Condition-based Maintenance (CBM) Program
- PI Visualization Suite (provides unlimited use of PI Vision, PI ProcessBook, PI DataLink and PI Manual Logger)
- Implement new PI Vision Web Server
- Implement PI AF, PI Analytics and PI Notifications
- PI AF Workshop
- PI Vision Workshop/Training

Gas Engineering:

- Implement new PI Server with unlimited tags (999,999 tags)
- Implement new PI Vision Web Server
- PI Visualization Suite (provides unlimited use of PI Vision, PI ProcessBook, PI DataLink and PI Manual Logger)
- PI AF Workshop
- PI Vision Workshop/Training

LNG:

- Implement new PI Server with unlimited tags (999,999 tags)
- Implement new PI Vision Web Server
- PI Visualization Suite (provides unlimited use of PI Vision, PI ProcessBook, PI DataLink and PI Manual Logger)
- PI AF Workshop
- PI Vision Workshop/Training

Central Operations:

- Implement new PI Server with unlimited tags (999,999 tags)
- Convert existing Pump House PI Server and Ancillary PI server to unlimited tags (999,999 tags)
- Convert PI servers to High Availability (HA) PI (mirrored PI Servers – Primary/Secondary with auto failover)
- Implement new PI Vision Web Server
- PI Visualization Suite (provides unlimited use of PI Vision, PI ProcessBook, PI DataLink and PI Manual Logger)
- Implement PI AF, PI Analytics and PI Notifications
- PI AF Workshop
- PI Vision Workshop/Training

Relationship to 5-Year and Long-Range Plans and Enterprise Risk Management Strategy

2. Supplemental Information

Alternatives

Alternative 1 description and reason for rejection
Do Nothing and continue to purchase PI software licenses and PI Services on a project-by-project basis.

Alternative 2 description and reason for rejection

Alternative 3 description and reason for rejection

Risk of No Action

Risk 1
Continuing to purchase PI software licenses and PI Services on a project-by-project basis is very inefficient, time consuming and not very cost effective, and will cost Con Edison millions of additional expense dollars in the coming years.

Annual maintenance (PI SRP) will increase based on the following:

- Purchasing additional PI tags to expand existing PI Systems (Electric, Gas & Steam)
- Purchasing new PI Systems (for future PI system expansions for other groups)
- Purchasing additional PI Client licenses for new PI users across the Company

In addition, the annual PI Support/Maintenance (SRP) rate will likely increase from 15% to 18% in 2021 which means that the annual PI SRP will increase from the current $1M/year to $1.2M/year (**20% increase in annual Expense**) without the purchase of any additional PI software licenses listed above.

Non-Financial Benefits

- PI EA will allow Con Edison to use additional modules such as PI Analytics and PI Notifications and PI Visualization Suite.
- PI EA includes additional services such as on-site/off-site training and workshops. All Con Edison PI users can be trained according to the OSISoft recommendation on an appropriate learning path that will fit our business needs.
- Dedicated team of advisors will provide strategic advisory services on PI System and enterprise deployment, as well as long-range architectural and strategic planning.
- Eliminating direct access to the SCADA system by connecting all users to the PI System. This allows users to run large queries without crashing the SCADA system
- PI data standardization:
  - Standardizing performance calculations in the PI Server and performance dashboard in PI Vision to replace existing spreadsheets separately kept by different engineers with different calculations to yield the same results. The dashboard would allow engineers to quickly spot check performance and drill down for more information
  - Ability to proactively perform condition-based and predictive maintenance using PI built-in analytic tools and integrating them with existing Con Edison work management products

Summary of Financial Benefits and Costs (attach backup)

1. Cost-benefit analysis (if required)

Over the last 10 years, SRP maintenance contract has increased from $600K to $1M. Operations anticipates purchasing additional PI tags and software licenses. Hence, expected expenditure would be $3M-$4M in Capital which is expected to increase O&M by $.5M annually. This would then increase SRP to $1.5M -$1.8M

2. Major financial benefits

Under this project the Company will secure an Enterprise Agreement with a one-time fee of 8.8M (Capital) and an annual ESRP of $1M/year beginning in 2022, which will be fixed until 2024, unlike the current SRP which will increase to $1.2M in 2021 and will continue to increase each and every year thereafter with every new PI software purchase.

ROI is 5 years, as with a projected PI software spend of just $2.75M - $3M on various projects over the next 5 years, which is very likely, and an annual SRP rate of 18%, the total additional cost (new PI software licenses + additional SRP for the new PI software).

3. Total cost

Total of capital $9.2M over 2020 and 2021 and $3.0M O&M cost over 2022-2024.

4. Basis for estimate

Estimate is based on current customers count across Electric, Gas, and Steam and the anticipated spend on tags license in the coming years.

5. Conclusion

Implementing an enterprise PI platform will reduce O&M by $2M over 2020&2021 and cost avoidance of $600K until 2024.

Project Risks and Mitigation Plan

Evaluate and describe any risks that might extend the project timeline, prevent completion, or lead to cost overruns. Explain plan to minimize these risks.

Risk 1	Mitigation plan
None	

Technical Evaluation / Analysis

- Annual evaluation of Con Edison PI system - PI experts will collaborate with the Con Edison IT Team and the various Electric, Gas & Steam business stakeholders to ensure that VALUE, alignment of business needs and industry practices with PI system optimization, continues to be realized throughout the year.
- OSISoft Cyber Security Experts would work with Con Edison Cyber Security Experts & the various stakeholders to ensure PI is being deployed in a consistent and secure manner, following Con Edison Cybersecurity rules and guidelines and implementing Industry Best Practices.

3. Funding Detail

Historical Spend

	Actual 2016	**Actual 2017**	**Actual 2018**	**Actual 2019**	**Historic Year** (O&M only)	**Forecast 2020**
Capital						
O&M						

Total Request ($000): $12,603,200

Total Request by Year:

	Request 2020	**Request 2021**	**Request 2022**	**Request 2023**	**Request 2024**
Capital	$9,203,200	$400,000			
O&M*			$1,000,000	$1,000,000	$1,000,000

Capital Request by Elements of Expense:

EOE	2020	2021	2022	2023	2024
Labor	$400,000	$400,000			
M&S	$8,303,200				
Contract Services					
Other (Hardware)	500,000				
Overheads					
Total	$9,203,200	$400,000			

Total Gross Cost Savings / Avoidance by Year:

	2020	2021	2022	2023	2024
O&M Savings	$950,000	$950,000			
O&M Avoidance			$200,000	$200,000	$200,000
Capital Savings					
Capital Avoidance		$4,000,000	$4,000,000		

Total Ongoing Maintenance Expense by Year:

	2020	2021	2022	2023	2024
O&M	$0	0	$1,000,000	$1,000,000	$1,000,000
Capital					

*If whitepaper is supporting a capital project/program this refers to implementation O&M

4. Definitions

Total Funding Request: All funding requested for program or project over program/project lifecycle or for on-going programs the five-year requested amount, including all capital, O&M, retirement.

Cost Savings: Reductions in costs that are currently being incurred (e.g., reduced annual maintenance cost relative to today)

Cost Avoidance: Reductions in anticipated future costs that don't occur today (e.g., anticipated short-term fixes/maintenance if capital isn't deployed)

Project Status:

- Initiation – New project, not authorized yet
- Planning – Project authorized, not started yet
- Executing – Project in-flight
- On-going – Annual program

X	Capital
	O&M

2019 – 2023 Electric Operations

Project/Program Title	Outage Management System Enhancements Phase III (OMS) Outage Management System Enhancements Phase IV (OMS)
Project Number or Project Task	2017-2020 2021-2023 L0 - 24952303
Status of Project	Phase III Implementation Phase IV
Estimated Start Date	Phase III 1/2017 Phase IV 1/2021
Estimated Completion Date	Phase III 12/2020 Phase IV 12/2023
Work Plan Category	Strategic - IT Enhancements

Work Description:

The use of Outage Management Systems and associated dashboards is critical to operators and other mid-high level decision makers to ensure the efficient assessment and response to incidents impacting service to our customers. Continued enhancements and integration of OMS systems with other technology is critical to ensuring continued focus on our customer needs. The Company continues to make significant improvements in its ability to quickly understand the number of customers impacted by power disturbances and provide customers with timely estimated time of restoration. These accomplishments were achieved through a series of process improvements and enhancements of the Outage Management suite of systems including STAR (System Trouble Analysis and Reporting). STAR is based on Oracle's Outage Management System software suite. Increased attention to providing timely ETRs as well as enhancing the accuracy of customer impacts via the integration of OMS, SCADA, and AMI underlines the need to continue focus on outage management systems.

In 2017, new modules were purchased including: ICCP SCADA adaptor, training simulator and OMA (Outage Mobile Application). The Company is currently in various stages of customizing, developing and testing various aspects of these new features for integration into the overall OMS platform. Phase III of this project, which commenced in 2017 and runs thru 2020, also includes enhancements to existing applications (OMS and Switching) as well as configuration changes to new vendor releases. Phase IV is expected to commence in 2021 and will continue to build on the existing platform and as well as add new tools that are continually being developed as result of changing technology and grid modernization.

By the summer of 2018, Electric Operations expects to complete the upgrade to the Outage Management System (OMS) by upgrading to Oracle's current standard version of NMS 2.3. This enables the Company to take full advantage of new enhancements offered by the product as well as ensuring adequate support in terms of service packs and patches. Con Edison has been taking progressive steps to improve how the Company responds to customer outages with new technology and tools that are flexible and functional. Enhancements include more visibility to outages to critical customers, including the MTA, due to an expanded critical customer fields, as well as various features that will support the upcoming OMS/AMI integration.

In keeping with its current 3- year upgrade schedule, the Company will look to upgrade to the most current version of the vendor's OMS product by mid – 2021 (version of NMS 2.5). This enables the

Company to take full advantage of new enhancements offered by the OMS product line as well as ensuring adequate support in terms of service packs and patches from the vendor.

Going forward from 2019 through 2023, continuous efforts to identify and incorporate enhancements within the modules utilized by the OMS system will supplement efforts to better identify opportunities for enhanced operator training. The recent purchase of the training simulator will provide a tool for trainers to develop real time scenarios. These scenarios will be provided to trainees to assess their ability to utilize the various OMS tools to address the situations they are given to ensure they are addressed appropriately and that they are using all of the tools correctly.

In addition, collaboration with other utilities and vendors has demonstrated the need to regularly upgrade associated OMS hardware and software to remain in alignment with product improvements and changing industry technologies as well as avoiding exposure to unsupported hardware and software, the initiatives to begin in 2021, hardware was purchased in 2020. In addition, there are other modules that are currently not utilized by the Company, that need to continue to be evaluated for further enhancements on how we do business. Expected growth and development in Distributed Energy Resources and REV initiatives is expected to drive opportunities for improvement in the OMS systems utilized by the operators in order to better understand the impact the effect of these systems on the distribution system.

To enhance operational excellence, the electronic switching module has been moved to production and is in various stages of utilization by the operating regions. During the 2019-2020 period, the Company is also looking to implement other modules that were procured as part of this project including enhanced SCADA integration with OMS, a training simulator and a mobile application. In 2018, a pilot application is being introduced that will allow field crews to directly update ETRs to customers without operator intervention. Providing field crews with direct capability to update ETRs is expected to result in increased ETR accuracy and as a result, increased customer satisfaction. Training operators in consistent use of the OMS products will not only result in enhanced customer experiences and increased operational excellence, it is also critical to supporting the Company's near term vision of control center consolidation.

Justification Summary:

The enhancements summarized in the Technical Evaluation/Analysis detail how Electric Operations will utilize improved technology to respond to customer outages in a timelier manner, become more transparent with customers and increase operational excellence. Continued enhancements with the recently updated OMS system as well as future software and hardware upgrades will provide increased functionality to enhance day to day operations, storm outage response, and enable a more efficient process for planning and prioritizing work.

As part of this project going forward, enhancements to the various modules include: enhancements to the base OMS application, enhancements to electronic switching, AMI/OMS integration, development of the training simulator and increased usage of the mobile application for electronic switching and damage assessment. AMI –OMS integration is expected in the 3rd quarter of 2018. One of the benefits of this effort is the transparency that this real time information will provide to our OMS system and the control room operators. This will provide better information to outage models for more accurate understanding of customer impact from events, especially on the network system, where there is very limited information currently available that allows operators to determine the extent of an outage more quickly than in the past. It will also provide the ability to better identify embedded outages as well as provide the operators to ping meters to minimize dispatch of resources to customer problems.

Remaining highlights of this project for Phase III include:
$ 1 million for OMS hardware upgrade in 2020
$ 3 million for enhancement to applications including: dynamic switching, AMI/OMS integration, training simulator and the further development of the mobile application

Supplemental Information:

- Alternatives:
  Other options for the OMS program would be to:
  1. Remain on the current version of OMS system, make no significant additions or enhancements, and rely on existing interfaces and functionality as well as older technology platforms.

  2. Identify a replacement for the OMS system with a competing outage management system. Acquisition and development costs as well as the costs associated with additional training for our operators are expected to be quite substantial if a replacement system were to be considered.

- Risk of No Action:

  Like many other software upgrades, there is generally a significant lag between the release of a vendor application and the implementation of that new system in a live environment. Because of the critical nature of an OMS application, significant integration and operator testing must be done within host environment before a "go-live". This lag can result in the go-live for an OMS upgrade being a couple of years after the vendor product release. By this point, vendors are already involved in development of new products to keep up with new technologies, integration platforms and customer requested enhancements.

  Over the last several years, the Company has made great strides in staying current with the vendor's release of upgrades to its OMS product line. The Company has generally operating on a 3 year cycle, It is imperative that we maintain that momentum and ensure that continuous maintenance, enhancements and evolvement are part of those efforts to maintain alignment with our peer utilities. With no enhancements the older technology will be difficult to maintain, as internal staff and vendor support personnel becoming no longer available to support existing products and systems. We want to ensure that we are utilizing the most cutting edge technology as it relates to new enhancements and features that are consistent with industry needs/drivers.

- Non-financial Benefits:
  The continued use and enhancements of the new outage management systems will continue to enable Electric Operations to efficiently evaluate, prioritize and manage electric outages on both the network and non-network distribution systems. The use of the OMS system will continue to help facilitate improved outage impact assessment, response and customer communication.
  - Enhance external relationships with our customers
  - Reduce complaints to executives, elected officials, DOT, and PSC
  - Improve coordination and communication within Con Edison
  - More efficient use of field crews through the use of the AMI/OMS integration and mobile applications. The ability to integrate this new data stream with our OMS system to further improve the ability of operators to fully understand the problem and better serve our customers will be a large part of our efforts in this area. With the mobile application, field crews will be able to update ETR and receive and transmit switching orders

- Technical Evaluation/Analysis:
  Con Edison is committed to developing best practice outage restoration processes and information systems. These processes and systems help facilitate the correct assessment of customer outages, effective restoration planning, and timely return of service to customers. The Company continues to make significant improvement in its ability to quickly understand the number of customers

impacted by power disturbances and provide customers with timely information on restoration times. These accomplishments were achieved through a series of process improvements and enhancements of the Outage Management suite of systems including STAR, which is based on Oracle's Distribution Management System software suite. The Oracle product continues to be one of the leading outage management software suites and is utilized worldwide by many large utilities. The technical evaluation considered the following activities that are expected to be evaluated and implemented over the upcoming years:

- Implement additional SCADA to STAR functionality using XA/21
- Continue to implement additional functionality available to improve the accuracy of customer Estimated Time of Restorations (ETRs)
- Implement Advanced Meter Infrastructure (AMI) with the OMS to improve outage identification, grouping and dispatch.
- Use of the mobile application to allow field crews to update ETRs, provide outage causes to customers and receive/transmit switching orders electronically
- Investigate and implement improvements as required for Damage Assessment to enhance remote damage data capture and interfaces with STAR or other OMS solutions for the timely development of work plan and customer level ETR's.
- Implement the Automated Switch Plans module of the Distribution Switching System (DSS) to improve the OMS process and development of the training simulator for operators.
- Identify new testing and monitoring tools to cover all functionalities within OMS including model viewer and the overall IT health of the systems
- Implement improvements to enhance training capabilities by creating more e-learning modules, and quick videos while providing additional in-class training for OMS processes and systems
- Continue efforts to maintain alignment with major software release upgrades

- Project Relationships (if applicable):
  Other projects that have close relationships include all applications related to improving how the Company manages Customer interfaces and related communications including the Customer Project Management System (CPMS), Work Management System (WMS), the Outage Management Dashboard (BI) and external Customer Portal.

Historical Spend

Actual 2014	Actual 2015	Actual 2016	Actual 2017	Actual 2018 (projected)
2220	1311	1081	3,971	2,500

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 2014	Actual 2015	Actual 2016	Actual 2017	2018 (projected)
Labor	177	167	112	303	300
M&S	595	-	2	16	-
A/P	1326	1011	897	3296	1870
Other	1	-	2	32	30
Overheads	121	133	68	324	300
Total	2220	1311	1081	3971	2500

Phase III Funding Level ($000): Funding is already authorized and approved for this project thru 2020

Request 2019	Request 2020			
1500	2500			

Phase IV Request ($000):

Request 2021	Request 2022	Request 2023		
2500	1750	1750		

Business Unit / Division
Budget Year

1. Project / Program Summary

Type: ☒ Project ☐ Program	**Category: ☒ Capital ☐ O&M**
Work Plan Category: ☐ Regulatory Mandated ☒ Operationally Required ☐ Strategic	
Project/Program Title: PeopleTools 8.58 Upgrade – Human Resources	
Project/Program Manager: Vinesh Chatterjee	**Project/Program Number (Level 1):**
Status: ☒ Initiation ☐ Planning ☐ Execution ☐ On-going ☐ ☐ Other: _____	
Estimated Start Date: August 2020	**Estimated Date In Service: January 2021**
A. Total Funding Request ($000) **Capital: 3,243** **O&M:**	**B.** **☐ 5-Year Gross Cost Savings ($000)** **☐ 5-Year Gross Cost Avoidance ($000)** **O&M:** **Capital:**
C. 5-Year Ongoing Maintenance Expense ($000) **O&M:** **Capital:**	**D. Investment Payback Period:** **(Years/months) (If applicable)**

Work Description:
Currently the company uses Oracle PeopleSoft HCM as the HR Payroll system and PeopleSoft CRM for HR Help desk. Con Edison is responsible to upgrade the on-premise HR systems and maintain the hardware to house the production systems and all the test environments. The support provided by Oracle includes security patches, tax update, upgrades to the underlying technology called PeopleTools and PeopleSoft application upgrades. To remain eligible to receive security patches and tax updates PeopleTools must be upgraded.

In 2018 the company signed a Strategic Partnership with Oracle which included the HCM Cloud application which resulted in HR and IT is re-evaluating the planned HR Payroll PeopleTools upgrade project.

The scope of this project includes the required technology upgrade of PeopleTools. The upgrade of PeopleSoft application and the implementation of mobile technology has been deferred to a pending a future HCM Cloud project and the scope and planned work to implement new functionality has been put on hold. The PeopleTools technology upgrade is required to maintain support with Oracle to continue to receive security updates and tax updates until 2023.

Justification Summary:

The HR/Payroll system operates on the PeopleSoft HCM and CRM platforms, which manage critical HR and CRM processes across CECONY, O&R and CET. The PeopleSoft applications are built upon a toolset called PeopleTools which is the underlying framework for the application. Both the applications and PeopleTools require separate and distinct Oracle support (i.e., upgrades, bug fixes, security patches, etc.) and each system cannot operate without the other.

To remain eligible to receive security patches and tax updates PeopleTools must be upgraded.

Regulatory Mandated/ Reduce and Manage Risks

Each quarter, Oracle releases security patches, application patches, and tax updates for HR Payroll. Like many other vendor product applications, Oracle's patches and updates are critical to the proper operation and security of the application/toolsets. Without the PeopleTools upgrade, we will not receive the automate tax updates, thus risk becoming non-compliant with the IRS codes.

Operationally Required

A deferral of this project would have immediate consequences on the HR Payroll System. The existing support and maintenance for the current version of PeopleTools expires in January 2022 and the HCM Cloud platform will not be implemented in time to stay compliant with security patches. Without the upgrade there will be a gap in applying security patches leaving the system vulnerable for a cyber-attack and increases the risk of employee and retiree personally identifiable information (PII) theft.

Enhance External Relationships:

The project improves relations with the union by ensuring payroll/time keeping is not put at risk. HR Payroll receives information from various work management systems and through direct input of time into the system. We have experienced complaints from employees and the unions when information is not able to seamlessly flow from the interfaces from these systems. The upgrade is required to ensure the system is functioning optimally so that there is no interruption in payroll processing.

Relationship to 5-Year and Long-Range Plans and Enterprise Risk Management Strategy
The long-range plan is to replace HR Payroll system with Oracle HCM Cloud. The PeopleTools 8.58 upgrade is required to maintain the existing HR Payroll system with the most current security and tax law updates until the new system has been moved to production in 2022.

2. Supplemental Information

Alternatives

Alternative 1 description and reason for rejection
Not upgrading the HR Payroll system will result in continuing to use the application without the appropriate security and tax law updates. The system could continue to function however there is a high risk of inaccurate payroll and potential data breach.

Alternative 2 description and reason for rejection

Alternative 3 description and reason for rejection

Risk of No Action

If Con Edison does not upgrade the PeopleSoft systems, significant risk to the system will result. Oracle will no longer support the current version of PeopleTools. No action would result in performance degradation as the hardware will be outdated and exceed the supported end of life date. It is recommended that Con Edison remain in compliance of all required tax updates, system bug fixes and security patches.

Risk 1

The payroll system will not be updated with tax law changes resulting in inaccurate payroll processing.

Risk 2

Security patches will not be applied to the system leaving the system vulnerable to cyber-attacks and employee and retiree PII at risk for theft.

Risk 3

Non-Financial Benefits

System upgrades are required to maintain system support (e.g., mandatory tax updates, system bug fixes and security patches) through Oracle.

Summary of Financial Benefits and Costs (attach backup)

1. Cost-benefit analysis (if required)

To perform financial analysis on the project or program: Refer to Corporate Instruction 291-1 "Cost-Benefit Analysis (CBA) Guidelines" to determine cost avoidance or cost savings potential. Also, refer to "Estimating Cost Contingency" Guidelines and "Estimating Escalation Cost" Guidelines, both of which are available on the Project Management Society page on the Con Edison intranet site under the Project Manager's Toolkit menu. Attach data (e.g. estimates and quotes from vendors, model outputs) as needed.

2. Major financial benefits

Explain major benefits (e.g., revenue increase, cost avoidance) and demonstrate these benefits using financial metrics (e.g., net present value, internal rate of return, breakeven point, payback period) as calculated according to the CBA guidelines. If project/program results in cost savings identify the owning cost center (Organization) that will realize the savings and whether the savings are labor or non-labor. If non-labor include the expected FTE reduction and the baseline FTEs utilized for the assessment.

3. Total cost

State the total project/program implementation cost (which should match the detailed funding breakdown below), along with any on-going financial costs associated with the project/program. For software projects, segregate costs by each phase of development: feasibility, design, development, and production/implementation.

4. Basis for estimate

Explain the method used to create the estimate. Include all key assumptions.

5. Conclusion

Should the project be done at all? Does it make sense to spend additional dollars to continue the project? Justify.

Project Risks and Mitigation Plan
Evaluate and describe any risks that might extend the project timeline, prevent completion, or lead to cost overruns. Explain plan to minimize these risks.

Risk 1	Mitigation plan
Risk 2	Mitigation plan

Technical Evaluation / Analysis
Infrastructure Support:

Although the upgrade will leverage current system architecture, the existing servers require updating as their support expires in 2022. Additional database licenses are also required and are included in the Oracle Strategic Partnership.

System Compatibility:

Upgrading to the latest version of PeopleTools allows Con Edison to leverage current HR/Payroll system architecture and can be maintained by our current technical and functional PeopleSoft HR Payroll support team with help of some additional resources or staff augmentation on technical and business support teams during the upgrade.

Customization/Development:

It is expected that the PeopleTools upgrade may require retrofits to existing customizations.

Project Relationships (if applicable)

- Work Management Systems
  - Maximo
  - Logica
  - JTS
  - GOPs
  - MWM
  - WMS (O&R)
- Oracle eBS (Financials)
  - General Ledger
  - Cost Accounting
  - Employee Data
  - Accounts Payable
- Benefits Vendors (i.e. CIGNA, MetLife)
- Payroll Vendors (i.e. ADP, BNY Mellon)
- Workforce Vendors (i.e. Equifax, ProWatch)
- Recruitment (i.e. Medgate, Sterling)
  - OHAS/Sick time processing

3. Funding Detail

Historical Spend

	Actual 2016	Actual 2017	Actual 2018	Actual 2019	Historic Year (O&M only)	Forecast 2020
Capital						
O&M						

Total Request ($000):

Total Request by Year:

	Request 2020	Request 2021	Request 2022	Request 2022	Request 2024
Capital	**2,746**	**497**			
O&M*					

Capital Request by Elements of Expense:

EOE	2020	2021	2022	2023	2024
Labor	**262**	**68**			
M&S					
Contract Services	**1,887**	**310**			
Other	**478**	**89**			
Overheads	**119**	**30**			
Total	**2,746**	**497**			

Total Gross Cost Savings / Avoidance by Year:

	2021	2022	2023	2024	2025
O&M Savings					
O&M Avoidance					
Capital Savings					
Capital Avoidance					

Total Ongoing Maintenance Expense by Year:

	2021	2022	2023	2024	2025
O&M					
Capital					

*If whitepaper is supporting a capital project/program this refers to implementation O&M

4. Definitions

Total Funding Request: All funding requested for program or project over program/project lifecycle or for on-going programs the five-year requested amount, including all capital, O&M, retirement.

Cost Savings: Reductions in costs that are currently being incurred (e.g., reduced annual maintenance cost relative to today)

Cost Avoidance: Reductions in anticipated future costs that don't occur today (e.g., anticipated short-term fixes/maintenance if capital isn't deployed)

Project Status:

- Initiation – New project, not authorized yet
- Planning – Project authorized, not started yet
- Executing – Project in-flight
- On-going – Annual program

Substation Operations
2021

1. Project / Program Summary

Type: ☒ Project ☐ Program	**Category: ☒ Capital ☐ O&M**
Work Plan Category: ☐ Regulatory Mandated ☒ Operationally Required ☐ Strategic	
Project/Program Title: Stop Tag Project	
Project/Program Manager: Sebastian Vero	**Project/Program Number (Level 1):**
Status: ☐ Initiation ☐ Planning ☒ Execution ☐ On-going ☐ ☐ Other: _____	
Estimated Start Date: 1/01/2020	**Estimated Date In Service: 12/31/2020**
A. Total Funding Request ($000) **Capital: $485** **O&M:**	**B.** **☐ 5-Year Gross Cost Savings ($000)** **☐ 5-Year Gross Cost Avoidance ($000)** **O&M:** **Capital:**
C. 5-Year Ongoing Maintenance Expense ($000) **O&M:** **Capital:**	**D. Investment Payback Period: (Years/months) (If applicable)**

Work Description:

The current method of recording and tracking Stop Tags associated with Operating Orders is to hand write them on stop tag stock. The operating orders are sent down from the District Operator (Operating Authority), electronically via Rapid Restore and the Substation Operator then fills out the required information by hand on both the main body of the Stop Tag and on the detachable stub. The main bodies of the stop tags are then placed on operating controls of equipment to control their operation and the detachable stubs are maintained in the control room by the Substation Operator. These stop tags provide a control of equipment status that is used for protection of working crews from hazardous energy.

At the completion of work, Operating Orders are again sent down to the Substation Operator electronically via Rapid Restore. The Substation Operator then proceeds to restore equipment and remove stop tags. The tags are then compared manually to the stubs retained in the control room to ensure all are accounted for. Unfortunately this manual process has failed on occasion leading to operating errors and equipment damage, with the potential for employee injury.

Substation Operations wishes to develop an electronic Stop Tag application to print out the information required for Stop Tags directly from the Rapid Restore system so that all information is accurate and electronically associated with the orders. The stop tag serial numbers are electronically tracked and a PIN number is generated to ensure that all stop tags are accounted for upon removal. Dedicated printers will be provided to print out labels so that they can be applied directly to existing stop tag stock, which is hardened to exist securely while placed on substation equipment.

Justification Summary:
The new computerized application will allow Substation Operators to print out multiple stop tags all at once saving substantial time over filling them out by hand. The information will come directly from the

electronic operating order so it will be accurate, and a specific PIN number will be printed on the main body of the tag (only). Upon removing the tags, the Substation Operator will be required to input the PIN number into Rapid Restore in order to return the operating order to the District Operator. This electronically controlled step will prevent the operator from inadvertently leaving a stop tag on the equipment being operated and then accounting for it upon return of the order.

Significant improvements in operating excellence that could be realized by developing this new Stop Tag application are:

- Automatic printing of Stop Tag labels will save time and prevent transcription errors.
- Tracking of all Stop Tag information will be done electronically and will be retrievable during incident review eliminating the need to archive paper tags.
- Specific electronically generated PIN numbers will eliminate the possibility of erroneously accounting for the removal of a stop tag because return of the order will be blocked without the PIN which is printed only on the main body of the tag, not on the stub.
- Electronic Interface to Rapid Restore and FMS/TOMS will ensure accurate tag info is available at equipment held off for work.

Relationship to 5-Year and Long-Range Plans and Enterprise Risk Management Strategy

The program is designed to support District Operators and Substation Operators with enhanced situational awareness of the state of the electric system.

2. Supplemental Information

Alternatives

Briefly describe reasonable alternatives and reason for rejection (e.g., costs, timing, etc.). ***At least one is required.***

Alternative 1 description and reason for rejection

Continue using a manual stop tag process and develop a new manual system for ensuring accurate reconciliation. This approach is not recommended as it does not make efficient use of existing technology which has proven effective at improving operating performance in other aspects of the process.

Alternative 2 description and reason for rejection

Alternative 3 description and reason for rejection

Risk of No Action

Give the consequences, including enterprise risks that might arise by not doing the project/ program. Quantify the risks, if applicable.

Risk 1

This manual process has failed on occasion leading to operating errors and equipment damage, with the potential for employee injury.

Risk 2

Risk 3

Non-Financial Benefits

Examples:

- Improved reliability due to better asset and work management software tools.
- Improved proficiency in the configuration and use of Maximo.

Summary of Financial Benefits and Costs (attach backup)

1. Cost-benefit analysis (if required)

To perform financial analysis on the project or program: Refer to Corporate Instruction 291-1 "Cost-Benefit Analysis (CBA) Guidelines" to determine cost avoidance or cost savings potential. Also, refer to "Estimating Cost Contingency" Guidelines and "Estimating Escalation Cost" Guidelines, both of which are available on the Project Management Society page on the Con Edison intranet site under the Project Manager's Toolkit menu. Attach data (e.g. estimates and quotes from vendors, model outputs) as needed.

2. Major financial benefits

Explain major benefits (e.g., revenue increase, cost avoidance) and demonstrate these benefits using financial metrics (e.g., net present value, internal rate of return, breakeven point, payback period) as calculated according to the CBA guidelines. If project/program results in cost savings identify the owning cost center (Organization) that will realize the savings and whether the savings are labor or non-labor. If non-labor include the expected FTE reduction and the baseline FTEs utilized for the assessment.

3. Total cost

State the total project/program implementation cost (which should match the detailed funding breakdown below), along with any on-going financial costs associated with the project/program. For software projects, segregate costs by each phase of development: feasibility, design, development, and production/implementation.

4. Basis for estimate

Explain the method used to create the estimate. Include all key assumptions.

5. Conclusion

Should the project be done at all? Does it make sense to spend additional dollars to continue the project? Justify.

Project Risks and Mitigation Plan
Evaluate and describe any risks that might extend the project timeline, prevent completion, or lead to cost overruns. Explain plan to minimize these risks.

Risk 1	Mitigation plan
Risk 2	Mitigation plan

Technical Evaluation / Analysis
Describe any specific studies or analysis related to the project such as: trend analysis, internal/external studies, social studies, and related KPI's (e.g. System Average Interruption Frequency Index (SAIFI) or Customer Average Interruption Duration Index (CAIDI)). Load forecasts, failure trends, etc., may also be presented in this section. However, these analyses are not available for all projects or programs.

Project Relationships (if applicable)
Explain whether this project/program will impact other projects/programs. Some projects must be done together due to outages, or one project may depend on another (e.g. Mohansic/Buchanan projects or movement of distribution work due to Substation service date change).

3. Funding Detail

Historical Spend

	Actual 2016	Actual 2017	Actual 2018	Actual 2019	Historic Year (O&M only)	Forecast 2020
Capital						
O&M						

Total Request ($000):

Total Request by Year:

	Request 2020	Request 2021	Request 2022	Request 2023	Request 2024
Capital	281				
O&M*		200	200	200	200

Capital Request by Elements of Expense:

EOE	2020	2021	2022	2023	2024
Labor	281				
M&S					
Contract Services					
Other					
Overheads					

Total	**281**				

Total Gross Cost Savings / Avoidance by Year:

	2021	**2022**	**2023**	**2024**	**2025**
O&M Savings					
O&M Avoidance					
Capital Savings					
Capital Avoidance					

Total Ongoing Maintenance Expense by Year:

	2020	**2021**	**2022**	**2023**	**2024**
O&M		**200**	**200**	**200**	**200**
Capital	**281**				

*If whitepaper is supporting a capital project/program this refers to implementation O&M

4. Definitions

Total Funding Request: All funding requested for program or project over program/project lifecycle or for on-going programs the five-year requested amount, including all capital, O&M, retirement.

Cost Savings: Reductions in costs that are currently being incurred (e.g., reduced annual maintenance cost relative to today)

Cost Avoidance: Reductions in anticipated future costs that don't occur today (e.g., anticipated short-term fixes/maintenance if capital isn't deployed)

Project Status:

- Initiation – New project, not authorized yet
- Planning – Project authorized, not started yet
- Executing – Project in-flight
- On-going – Annual program