Consolidated Edison Company of New York, Inc.

Report on 2023 Capital Expenditures and

2024 - 2028 Electric Capital Forecast

Case 22-E-0064 – 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

February 28, 2024

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Summary T&D Capital Plan
2023 Capital Budget and Actual Spend

Thousands ($000)

	Rate Plan	Actual	Budget	Variation Between Actual and Budget	Variation %
Electric T&D					
System and Transmission	$498,778	$366,227	$498,778	($132,551)	(27%)
Substations	$473,793	$457,242	$473,793	($16,551)	(3%)
Distribution	$1,121,299	$1,231,505	$1,121,307	$110,197	10%
Sub-total Electric T&D	**$2,093,870**	**$2,054,974**	**$2,093,878**	**($38,904)**	**(2%)**
Electric Interference	$185,313	$163,422	$185,313	($21,891)	(12%)
Total Electric T&D	**$2,279,183**	**$2,218,396**	**$2,279,191**	**($60,795)**	**(3%)**
Electric Production	**$26,405**	**$32,750**	**$26,405**	**$6,346**	**24%**
Shared Services					
Facilities	$226,043	$166,753	$226,043	($59,289)	(26%)
IT Initiatives	$395,811	$501,956	$395,811	$106,145	27%
Total Shared Services*	**$621,853**	**$668,710**	**$621,853**	**$46,856**	**8%**
Sub-total Capital	**$2,927,441**	**$2,919,856**	**$2,927,449**	**($7,593)**	**(0%)**
Storm Hardening	**$30,644**	**$15,001**	**$30,644**	**($15,643)**	**(51%)**
Total Capital Expenditures	**$2,958,085**	**$2,934,857**	**$2,958,093**	**($23,236)**	**(1%)**
AMI	**$51,466**	**$45,285**	**$51,466**	**($6,181)**	**(12%)**
CES - Electric	**$104,000**	**$88,678**	**$104,000**	**($15,321)**	**(15%)**
Surcharge Projects					
Light Duty Electric Vehicle Charging	$26,919	$2,918	$26,919	($24,001)	(89%)
Idlewild	$10,204	$300	$10,204	($9,904)	(97%)
Eastern Queens	$8,848	$628	$8,848	($8,220)	(93%)
Brooklyn Clean Energy Hub	$81,000	$62,308	$81,000	($18,692)	(23%)
Total Capital Expenditures with Surcharge Projects	**$3,240,521**	**$3,134,974**	**$3,240,530**	**($105,556)**	**(3%)**

*Note: *83% of Shared Services is allocated to Electric*

System and Transmission Capital Summary
2023 Capital Budget and Actual Spend

Thousands ($000)

Project/Program Description	Rate Plan	Actual	Budget	Variation Between Actual and Budget
Environmental Programs	$441	$915	$441	$474
Information Technology	$300	$445	$300	$145
Replacement	$18,000	$1,440	$18,000	($16,560)
System Expansion	$250,769	$169,777	$250,769	($80,992)
Risk Reduction	$224,168	$186,851	$224,168	($37,317)
Safety and Security	$5,100	$6,799	$5,100	$1,699
Total System & Transmission Operations	$498,778	$366,227	$498,778	($132,551)
Public Improvement (PI)	$34,770	$25,533	$34,770	($9,237)
Total System & Transmission Operations with PI	$533,548	$391,760	$533,548	($141,788)

System and Transmission Operations
2023 Capital Budget and Actual Spend

Thousands ($000)

Project/Program Description	Rate Plan	Actual	Budget	Variation Between Actual and Budget	Variation %
Environmental					
Environmental Enhancements Programs	$441	$915	$441	$474	108%
Total - Environmental	**$441**	**$915**	**$441**	**$474**	108%
Information Technology					
Distribution Orders Enhancements	$300	$445	$300	$145	48%
Total Information Technology	**$300**	**$445**	**$300**	**$145**	**48%**
Replacement					
Transmission Feeder Failures	$15,000	($7)	$15,000	($15,007)	(100%)
Transmission Failures - Other (Potheads)	$3,000	$1,447	$3,000	($1,553)	(52%)
Total Replacement	**$18,000**	**$1,440**	**$18,000**	**($16,560)**	**(92%)**
System Expansion					
AMTRAK PSA-OAK	$5,000	$0	$5,000	($5,000)	(100%)
Rainey to Corona 138KV Feeder	$0	$1	$0	$1	100%
Rainey to Corona II 138KV Feeder	$63,700	$52,149	$63,700	($11,551)	(18%)
Gowanus To Greenwood 138KV Feeder	$34,000	$28,517	$34,000	($5,483)	(16%)
Goethals to Fox Hills - 138KV Feeder	$148,069	$89,108	$148,069	($58,961)	(40%)
Total - System Expansion	**$250,769**	**$169,777**	**$250,769**	**($80,992)**	**(32%)**
Risk Reduction					
Pipe Enhancement Program	$28,000	$41,674	$28,000	$13,674	49%
Joint Replacement Program	$10,500	$6,425	$10,500	($4,075)	(39%)
Emergent Transmission Reliability Program	$0	$6,781	$0	$6,781	100%
Dynamic Feeder Rating System Program	$882	$60	$882	($822)	(93%)
Overhead Transmission Structures Program	$3,000	$1,654	$3,000	($1,346)	(45%)
Underground Transmission Structure Modernization	$5,400	$6,914	$5,400	$1,514	28%
Feeder 38R51/38R52 Replacement Project	$144,244	$115,302	$144,244	($28,942)	(20%)
Feeder Replacement Program	$1,250	$48	$1,250	($1,202)	(96%)
Overhead Insulator Resiliency Program	$6,700	$2,720	$6,700	($3,980)	(59%)
Transmission Resiliency System	$0	($977)	$0	($977)	100%
Mobile Transmission Feeder Leak Detection Program	$300	$182	$300	($118)	(39%)
Right of Way Road Access Program	$1,000	$40	$1,000	($960)	(96%)
Queensboro Bridge Risk Mitigation Project	$20,000	$72	$20,000	($19,928)	(100%)
System Operation Enhancement	$400	$1,331	$400	$931	233%
EMS DevOps Upgrade	$2,492	$4,624	$2,492	$2,132	86%
Total Risk Reduction	**$224,168**	**$186,851**	**$224,168**	**($37,317)**	**(17%)**
Safety and Security					
Overhead Tower Rapid Rail Program	$4,700	$2,262	$4,700	($2,438)	(52%)
ECC and AECC Facility Security	$400	$4,536	$400	$4,136	1034%
Total Safety and Security	**$5,100**	**$6,799**	**$5,100**	**$1,699**	**33%**
Total System and Transmission Operations	**$498,778**	**$366,227**	**$498,778**	**($132,551)**	**(27%)**
Public Improvement	**$34,770**	**$25,533**	**$34,770**	**($9,237)**	**(27%)**
Total System and Transmission Operations with Public Improvement	**$533,548**	**$391,760**	**$533,548**	**($141,788)**	**(27%)**

Substation Operations Capital Summary
2023 Capital Budget and Actual Spend

Thousands ($000)

Project/Program Description	Rate Plan	Actual	Budget	Variation Between Actual and Budget
Environmental Programs	$15,532	$3,341	$15,532	($12,191)
Replacement	$73,600	$41,690	$73,600	($31,910)
System Expansion	$73,526	$64,081	$73,526	($9,445)
Risk Reduction	$297,880	$335,537	$297,880	$37,657
Safety and Security	$13,255	$12,593	$13,255	($662)
Total Substations Operations	$473,793	$457,242	$473,793	($16,551)
Storm Hardening	$0	$239	$0	$239
Total Substation Operations with Storm Hardening	$473,793	$457,482	$473,793	($16,311)
Surcharge Projects	$100,052	$63,236	$100,052	($36,816)
Grand Total with Surcharge Projects	$573,845	$520,718	$573,845	($53,127)

Substation Operations
2023 Capital Budget and Actual Spend

Thousands ($000)

Project/Program Description	Rate Plan	Actual	Budget	Variation Between Actual and Budget	Variation %
Environmental					
Substation EH&S Risk Mitigation Program	$15,532	$3,341	$15,532	($12,191)	(78%)
Total Environmental	**$15,532**	**$3,341**	**$15,532**	**($12,191)**	**(78%)**
Risk Reduction					
138kV Disturbance Monitoring Program	$4,800	$1,312	$4,800	($3,488)	(73%)
Category Alarm Program Various	$1,300	$858	$1,300	($442)	(34%)
DC System Upgrade Program	$5,100	$4,943	$5,100	($157)	(3%)
Disconnect Switch Capital Upgrade Program	$5,175	$3,060	$5,175	($2,115)	(41%)
Jamaica Install Additional Breakers in Bus Section 2E & 3W	$0	$3	$0	$3	100%
Circuit Switcher Replacement Program	$1,400	$2,360	$1,400	$960	69%
Other Capital Equipment Upgrades	$3,258	$618	$3,258	($2,640)	(81%)
Pumping Plants	$3,900	$6,512	$3,900	$2,612	67%
Ramapo Install New Surge Arrestors	$0	$430	$0	$430	100%
Reinforced Ground Grid Program	$6,100	$1,880	$6,100	($4,220)	(69%)
Relay Protection Communication Upgrades	$16,045	$4,282	$16,045	($11,763)	(73%)
Retrofit Overdutied 13kV & 27kV Circuit Breaker Programs	$13,800	$13,641	$13,800	($159)	(1%)
Substation Enclosure Upgrade Program	$1,400	($7)	$1,400	($1,407)	(101%)
Structural and Infrastructure Upgrades	$6,700	$6,784	$6,700	$84	1%
RTU Upgrade Program	$1,100	$1,483	$1,100	$383	35%
Transmission Station Metering & SCADA Upgrades	$3,182	$792	$3,182	($2,390)	(75%)
Condition Based Monitoring	$1,500	$3,200	$1,500	$1,700	113%
Fire Suppression System Upgrade	$7,500	$6,992	$7,500	($508)	(7%)
High Voltage Test Set Program	$2,000	$1,685	$2,000	($315)	(16%)
Relay Modification Program	$45,000	$47,289	$45,000	$2,289	5%
Roof Replacement Program	$2,500	$417	$2,500	($2,083)	(83%)
Auxiliary Station Equipment Program	$1,100	$1,011	$1,100	($89)	(8%)
Cap & Pin Insulator Replacement Program	$1,000	$0	$1,000	($1,000)	(100%)
High Voltage Circuit Breaker Capital Upgrade Program	$14,000	$12,280	$14,000	($1,720)	(12%)
SSO Loss Contingency Area Stat Rapid Recovery/Trans Resiliency Tsfs	$4,000	$6,201	$4,000	$2,201	55%
Substation Transformer Replacement Program	$77,500	$136,688	$77,500	$59,188	76%
U Type Bushing Replacement Program	$3,870	$1,709	$3,870	($2,161)	(56%)
Mobile Control Center	$0	$518	$0	$518	100%
East River Automation - Upgrade the 69 kV Yard	$3,000	$0	$3,000	($3,000)	(100%)
Area Reliability	$11,500	$11,585	$11,500	$85	1%
Protection, Automation and Control Program	$21,000	$31,435	$21,000	$10,435	50%
Elmsford 138kV Disconnect Switches	$0	$813	$0	$813	100%
Pothead Pressure Alarms	$150	$0	$150	($150)	(100%)
Gas Insulated Substation Replacement Program	$11,000	$20,719	$11,000	$9,719	88%
Area Substation Phased Equipment Program	$15,000	$2,591	$15,000	($12,409)	(83%)
Willowbrook-Install New Breakers	$0	$34	$0	$34	100%
Light and Power System Upgrades	$1,000	$0	$1,000	($1,000)	(100%)
Stabilize Pothead Stand Supports/Settlement	$2,000	$1,419	$2,000	($581)	(29%)
Total Risk Reduction	**$297,880**	**$335,537**	**$297,880**	**$37,657**	**13%**
System Expansion					
Establish Gateway Substation	30,000	$31,101	$30,000	$1,101	4%
Newtown TR4 and 138kV Feeder 38Q05 from Vernon	$10,000	$3,246	$10,000	($6,754)	(68%)
Vinegar Hill DSS	$33,026	$16,290	$33,026	($16,736)	(51%)
Parkchester 2 Replace Limiting 13kV Bus Sections No. 2	$0	$125	$0	$125	100%
E. 179th Street Switchgear and Bus Replacement	$0	$4,814	$0	$4,814	100%
Emergent Load Relief	$500	$6,492	$500	$5,992	1198%
Astoria Feeder 34124L Cable Bypass	$0	$181	$0	$181	100%
Bensonhurst 38B15T and TR10 Installation	$0	$1,831	$0	$1,831	100%
Total System Expansion	**$73,526**	**$64,081**	**$73,526**	**($9,445)**	**(13%)**
Replacement					
Failed Substation Transformer Program	$46,500	$26,099	$46,500	($20,401)	(44%)
Failed Substation Equipment Other than Transformers	$11,500	$15,575	$11,500	$4,075	35%
Hellgate Dock Refurbishment (SSO portion)	$15,600	$16	$15,600	($15,584)	(100%)
Total Replacement	**$73,600**	**$41,690**	**$73,600**	**($31,910)**	**(43%)**
Safety and Security					
Critical Infrastructure Protection (NERC) Security Upgrades	$625	$101	$625	($524)	(84%)
Substations Security Enhancement Program	$12,000	$12,406	$12,000	$406	3%
Cable Termination Platform Program	$630	$85	$630	($545)	(86%)
Total Safety and Security	**$13,255**	**$12,593**	**$13,255**	**($662)**	**(5%)**
Total Substation Operations	**$473,793**	**$457,242**	**$473,793**	**($16,551)**	**(3%)**
Storm Hardening	**$0**	**$239**	**$0**	**$239**	**100%**
Total Substation Operations with Storm Hardening	**$473,793**	**$457,482**	**$473,793**	**($16,311)**	**(3%)**
Surcharge Projects					
Idlewild	$10,204	$300	$10,204	($9,904)	(97%)
Eastern Queens	$8,848	$628	$8,848	($8,220)	(93%)
Brooklyn Clean Energy Hub	$81,000	$62,308	$81,000	($18,692)	(23%)
Surcharge Projects Total	**$100,052**	**$63,236**	**$100,052**	**($36,816)**	**(37%)**
Grand Total with Surcharge Projects	**$573,845**	**$520,718**	**$573,845**	**($53,127)**	**(9%)**

Electric Distribution Capital Summary
2023 Capital Budget and Actual Spend

Thousands ($000)

Project/Program Description	Rate Plan	Actual	Budget	Variation Between Actual and Budget
New Business	$202,382	$254,773	$202,388	$52,384
Replacement	$443,447	$476,729	$443,445	$33,284
System Expansion	$192,704	$208,184	$192,716	$15,468
Risk Reduction	$137,613	$104,398	$137,612	($33,214)
Environmental	$1,379	$3,729	$1,374	$2,356
Information Technology	$274	($2)	$274	($276)
Equipment Purchases	$143,500	$183,694	$143,499	$40,196
Total Electric Distribution	$1,121,299	$1,231,505	$1,121,307	$110,197
Storm Hardening	$30,644	$14,762	$30,644	($15,882)
Total Electric Distribution with Storm Hardening	$1,151,943	$1,246,266	$1,151,951	$94,315
Interference	$150,543	$137,890	$150,543	($12,653)
Total Electric Distribution with Storm Hardening & Interference	$1,302,486	$1,384,156	$1,302,494	$81,661
Surcharge Projects	$26,919	$2,918	$26,919	($24,001)
Grand Total with Surcharge Projects	$1,329,405	$1,387,074	$1,329,414	$57,661

Electric Distribution
2023 Capital Budget and Actual Spend

Thousands ($000)

Project/Program Description	Rate Plan	Actual	Budget	Variation Between Actual and Budget	Variation %
New Business					
DG Projects	$0	$2,723	$0	$2,723	100%
Meter Installation	$30,006	$28,626	$30,006	($1,380)	(5%)
New Business Capital	$172,376	$223,423	$172,382	$51,041	30%
Total New Business	**$202,382**	**$254,773**	**$202,388**	**$52,384**	**26%**
Replacement					
Overhead Emergency Response	$61,546	$64,727	$61,546	$3,181	5%
Primary Cable Replacement (OAs, FOTs, C&D Fault)	$98,715	$120,001	$98,715	$21,285	22%
Secondary Open Mains	$128,706	$141,798	$128,706	$13,092	10%
Service Replacements (Temporary Services and Bridges)	$68,515	$70,505	$68,516	$1,989	3%
Streetlights (Including Conduit)	$27,235	$23,084	$27,235	($4,151)	(15%)
Targeted Direct Buried Cable Replacement	$7,500	$11,982	$7,501	$4,482	60%
Transformer Installation	$51,229	$44,633	$51,226	($6,593)	(13%)
Total Replacement	**$443,447**	**$476,729**	**$443,445**	**$33,284**	**8%**
Risk Reduction					
28th Street- Flush	$0	$0	$0	$0	100%
Critical Facility Program	$9,000	$3,561	$9,001	($5,439)	(60%)
Non-Network Reliability	$41,300	$55,236	$41,313	$13,923	34%
Non-Network Resiliency with FLISR	$2,100	$2,967	$2,100	$868	41%
OH & UG Training Yards - Victory Blvd	$0	$5	$0	$5	100%
Pole Inspection and Treatment Program (C Truss)	$2,333	$4,913	$2,333	$2,580	111%
Pressure, Temperature and Oil Sensors	$945	$826	$943	($117)	(12%)
Primary Feeder Reliability	$50,000	$41,287	$50,000	($8,713)	(17%)
Remote Monitoring System	$3,222	$3,216	$3,222	($6)	(0%)
Security Fencing for Unit Substations on SI	$0	$608	$0	$608	100%
Shunt Reactors	$1,000	$212	$1,000	($788)	(79%)
Smart Sensors For Structures	$2,800	($347)	$2,800	($3,147)	(112%)
Remodel Ladies Locker Room at Transformer Shop	$0	$102	$0	$102	100%
Transformer Vault and Structures Modernization	$33,051	$59,214	$33,051	$26,162	79%
Underground Secondary Reliability Program	$22,000	$25,314	$22,001	$3,314	15%
USS Projects - 4kv USS Switchgear House Replacement	$10,731	$2,186	$10,731	($8,545)	(80%)
USS Projects - Unit Substation PTO/Unit S/S Modernization	$638	$0	$638	($638)	(100%)
USS Projects - Unit Substation Upgrade and Improvement	$162	$161	$162	($1)	(1%)
USS Projects - Unit Substation Transformer Replacement Program	$3,902	$7,625	$3,902	$3,723	95%
Vented Covers for Underground Structures	$1,000	$286	$1,000	($713)	(71%)
Wainwright - Willowbrook Stepdown Transformer Installations	$8,520	$811	$8,520	($7,709)	(90%)
Total Risk Reduction	**$192,704**	**$208,184**	**$192,716**	**$15,468**	**8%**
System Expansion					
BQDM Non Traditional	$0	$1	$0	$1	100%
E. 179th St Area Substation Reconstruction	$488	$0	$488	($488)	(100%)
Brownsville Area Load Relief	$35,264	$19,922	$35,264	($15,342)	(44%)
Crown Heights Network Split	$0	$306	$0	$306	100%
Network Transformer Relief	$10,782	$13,615	$10,782	$2,833	26%
Nevins St. Battery Storage	$0	($1,249)	$0	($1,249)	100%
NonNetwork Fdr Relief (Open Wire)	$6,279	$3,545	$6,278	($2,733)	(44%)
Other System Expansion	$0	$150	$0	$150	100%
Overhead Transformer Relief	$2,299	$1,713	$2,299	($586)	(25%)
Primary Cable Crossing (B/W City Island, Riverdale, Croton River, and B/Q Flushing)	$21,500	$1,315	$21,501	($20,186)	(94%)
Primary Feeder Relief	$6,176	$1,435	$6,176	($4,741)	(77%)
Secondary Mains Load Relief	$2,925	$845	$2,924	($2,079)	(71%)
W42nd St No. 1 to Astor Transfer	$2,000	$3,708	$2,000	$1,708	85%
West Bronx - Randall's Island Reconfiguration Program	$16,100	$23,506	$16,100	$7,406	46%
Williamsburg Network Improvement	$17,800	$32,835	$17,800	$15,035	84%
Woodrow Load Area	$0	$12	$0	$12	100%
Yorkville Crossings and Feeder Relief	$16,000	$2,740	$16,000	($13,260)	(83%)
Total System Expansion	**$137,613**	**$104,398**	**$137,612**	**($33,214)**	**(24%)**
Environmental					
Oil Minders Environmental	$1,379	$3,729	$1,374	$2,356	171%
Environmental Total	**$1,379**	**$3,729**	**$1,374**	**$2,356**	**171%**
Information Technology					
EV IT Platform	$0	($19)	$0	($19)	100%
Information Technology	$274	$17	$274	($257)	(94%)
Total Information Technology	**$274**	**($2)**	**$274**	**($276)**	**(101%)**
Equipment Purchases					
Meter Purchase	$7,500	$7,879	$7,500	$379	5%
Transformer Purchases	$136,000	$175,815	$135,999	$39,816	29%
Total Equipment Purchases	**$143,500**	**$183,694**	**$143,499**	**$40,196**	**28%**
Total Electric Distribution	**$1,121,299**	**$1,231,505**	**$1,121,307**	**$110,197**	**10%**
Storm Hardening					
460V Network Protector Replacement	$0	$1,797	$0	$1,797	100%
Selective Undergrounding	$25,000	$11,969	$25,000	($13,031)	(52%)
Substation Resiliency	$5,644	$899	$5,644	($4,745)	(84%)
120/208V Non-Submersible Unit Replacement	$0	$1	$0	$1	100%
Overhead Equipment Upgrades	$0	$95	$0	$95	100%
Total Storm Hardening	**$30,644**	**$14,762**	**$30,644**	**($15,882)**	**(52%)**
Total Electric Distribution with Storm Hardening	**$1,151,943**	**$1,246,266**	**$1,151,951**	**$94,315**	**8%**
Public Improvement	**$150,543**	**$137,890**	**$150,543**	**($12,653)**	**(8%)**
Total Electric Distribution with Storm Hardening and Public Improvement	**$1,302,486**	**$1,384,156**	**$1,302,494**	**$81,661**	**6%**
Surcharge Projects					
Light Duty Electric Vehicle Charging	$26,919	$2,918	$26,919	($24,001)	(89%)
Surcharge Projects Total	**$26,919**	**$2,918**	**$26,919**	**($24,001)**	**(89%)**
Grand Total with Surcharge Projects	**$1,329,405**	**$1,387,074**	**$1,329,414**	**$57,661**	**4%**

Customer Energy Solutions Capital Summary
2023 Capital Budget and Actual Spend

Thousands ($000)

Project/Program Description	Rate Plan	Actual	Budget	Variation Between Actual and Budget
System Expansion	$17,199	$16,470	$17,199	($729)
New Business	$5,900	$0	$5,900	($5,900)
Information Technology	$80,901	$72,208	$80,901	($8,692)
Total Electric Distribution	$104,000	$88,678	$104,000	($15,321)
Total AMI	$51,466	$45,285	$51,466	($6,181)

Customer Energy Solutions
2023 Capital Budget and Actual Spend

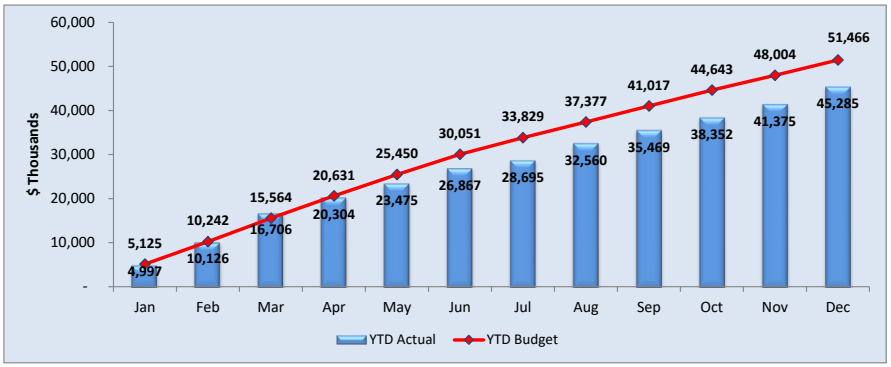
Thousands ($000)

Project/Program Description	Rate Plan	Actual	Budget	Variation Between Actual and Budget	Variation %
AMI	**$51,466**	**$45,285**	**$51,466**	**($6,181)**	**(12%)**
System Expansion					
Storage Program	$16,199	$15,264	$16,199	($935)	(6%)
Grid Edge Renewable Lab	$1,000	$114	$1,000	($886)	(89%)
Brownsville Battery Storage System *	$0	$424	$0	$424	100%
Pole Mounted Energy Storage System	$0	$669	$0	$669	100%
BQDM 2nd Feeder Ozone Park ESS	$0	$0	$0	$0	100%
Total System Expansion	**$17,199**	**$16,470**	**$17,199**	**($729)**	**(4%)**
New Business					
MR DER for LI *	$5,900	$0	$5,900	($5,900)	(100%)
Total New Business	**$5,900**	**$0**	**$5,900**	**($5,900)**	**(100%)**
Information Technology					
REV - DSPP	$60,896	$55,898	$60,896	($4,998)	(8%)
REV - Demonstration Projects	$0	($279)	$0	($279)	100%
ADMS/DERMS	$15,485	$13,511	$15,485	($1,974)	(13%)
Energy Efficiency Benchmarking	$0	$226	$0	$226	100%
Commercial Managed Charging: IT & Data Tools *	$0	$1,292	$0	$1,292	100%
Integrated Energy Data Resource (IEDR) *	$3,520	$1,561	$3,520	($1,959)	(56%)
Data Access Framework (DAF) *	$1,000	$0	$1,000	($1,000)	(100%)
Total Information Technology	**$80,901**	**$72,208**	**$80,901**	**($8,692)**	**(11%)**
Total Customer Energy Solutions	**$104,000**	**$88,678**	**$104,000**	**($15,321)**	**(15%)**

Note: * indicates not collected through base rates or is a hybrid collection

Consolidated Edison Company of New York, Inc.
AMI Project Update

Thousands ($000)



Description	Dec 2023 YTD			2023 Year-End		
	Actual	Budget	Variation	Target	Budget	Variation
AMI-Capital	$45,285	$51,466	($6,181)	$45,500	$51,466	($5,966)

Variance Explanation:

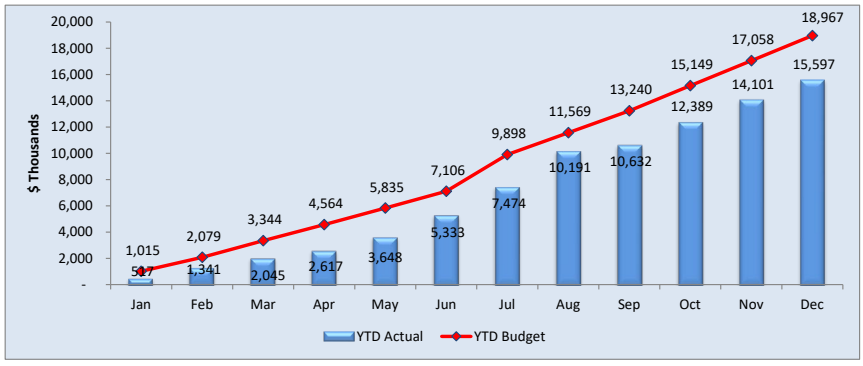
AMI's budget underrun is due to lower IT and equipment install costs and credits related to AMI equipment.

AMI Recent/Upcoming Milestones:

-Complete AMI mass deployment (PPS and Southern Cross - remaining meters) by December 31, 2023
Status: Completed

- Maintain estimated reads at 1.5% or below across optimized areas (Rolling YTD weighted average)
Status: Completed

-Complete Optimization of two areas in Manhattan by December 31
Status: Completed 3/31/2023

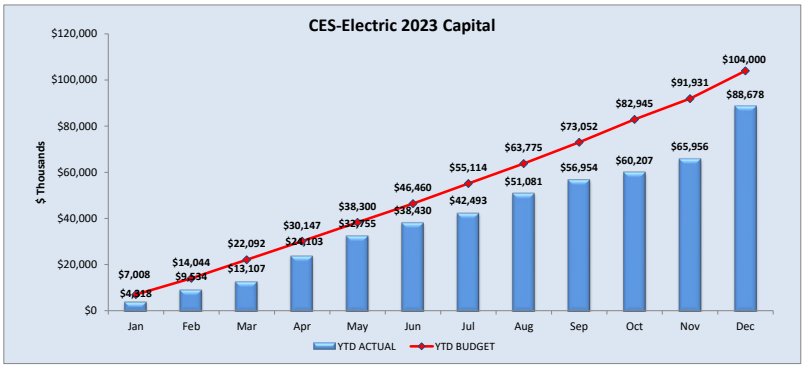


Description	Dec 2023 YTD			2023 Year-End		
	Actual	Budget	Variation	Target	Budget	Variation
AMI-O&M	$15,597	$18,967	($3,370)	$15,942	$18,967	($3,025)

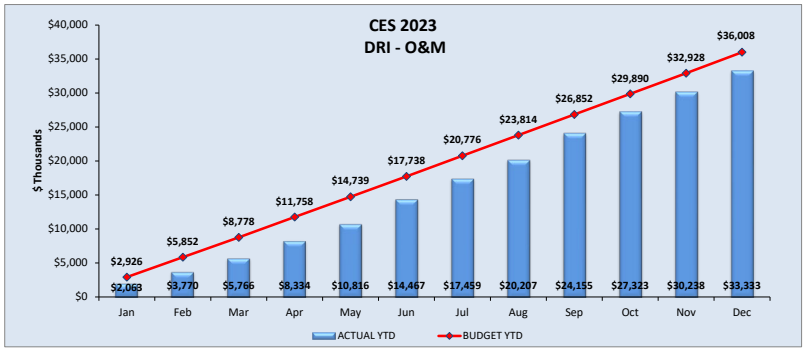
Variance Explanation:

AMI: The budget underrun is due to lower communication, contractor, and labor costs as well as the timing of an annual contract payment.

Consolidated Edison Company of New York, Inc
Capital - Distribution Resource Integration
Thousands ($000)



CES - Electric Capital Programs & Projects	Dec 2023 YTD			2023 Year-End		
	Actuals	Budget	Variance	Target	Budget	Variance
REV - Demonstration Projects - Solar	$10	$0	$10	$10	$0	$10
REV - Demonstration Projects - Storage on Demand	$38	$0	$38	$38	$0	$38
REV - Demonstration Projects - EV Make Ready	($328)	$0	($328)	($324)	$0	($324)
REV - Demonstration Project Total	**($279)**	**$0**	**($279)**	**($276)**	**$0**	**($276)**
DMTS	$4,485	$5,000	($515)	$5,118	$5,000	$118
CVO	$14,452	$15,000	($548)	$15,006	$15,000	$6
DRMS	$3,457	$9,960	($6,503)	$3,379	$9,960	($6,581)
MNPR/SCADA	$29,687	$29,336	$351	$23,498	$29,336	($5,838)
IOAP	$340	$600	($260)	$369	$600	($231)
Connect DER	$695	$1,000	($305)	$670	$1,000	($330)
Other Distributed System Platform Projects	$2,781		$2,781	$2,303		$2,303
REV - DSPP Total	**$55,898**	**$60,896**	**($4,998)**	**$50,343**	**$60,896**	**($10,553)**
Storage Program- Fresh Kills	$850	$6,631	($5,781)	$2,814	$6,631	($3,817)
Storate Program- Glendale	$337	$9,569	($9,232)	$1,408	$9,569	($8,161)
Storage Program - Fox Hills/ PA Adjustment	$14,077	$0	$14,077	$19,053	$0	$19,053
Storage Program Total	**$15,264**	**$16,200**	**($936)**	**$23,275**	**$16,200**	**$7,075**
Brownsville BQDM Battery Project	$424	$0	$424	$2,178	$0	$2,178
Pole Mounted Energy Storage System Project	$669	$0	$669	$618	$0	$618
BQDM 2nd Feeder Ozone Park ESS	$0	$0	$0	$30	$0	$30
Enterprise DERMS	$13,511	$15,485	($1,974)	$11,777	$15,485	($3,708)
Grid Edge Renewable Lab	$114	$1,000	($887)	$356	$1,000	($644)
Integrated Energy Data Resource (IEDR)/ Data Access Framework	$1,561	$4,520	($2,959)	$1,558	$4,520	($2,962)
Energy Efficiency Benchmarking	$226	$0	$226	$226	$0	$226
MR DER for DAC and LMI	$0	$5,900	($5,900)	$0	$5,900	($5,900)
Commercial EV Managed Charging: IT & Data Tools	$1,292	$0	$1,292	$600	$0	$600
Total CES Electric Other	**$17,796**	**$26,905**	**($9,109)**	**$17,343**	**$26,905**	**($9,561)**
Total Customer Energy Solutions	**$88,678**	**$104,000**	**($15,322)**	**$90,685**	**$104,000**	**($13,315)**



CES - DRI O&M Programs	Dec 2023 YTD			2023 Year-End		
	Actuals	Budget	Variance	Target	Budget	Variance
Utility of the Future	$948	$1,014	($66)	$976	$1,014	($38)
Distribution Planning	$6,308	$7,635	($1,327)	$7,073	$7,635	($562)
eMobility & Demonstration Projects	$1,865	$104	$1,761	$1,805	$104	$1,702
Office of VP DRI	$272	$0	$272	$237	$0	$237
CES Office of the SVP DPT	$565	$556	$10	$563	$556	$7
Digital Products&Demo Projects	$5,967	$10,059	($4,092)	$6,355	$10,059	($3,704)
Off VP Customer Clean Energy	$1,183	$11,079	($9,896)	$1,389	$11,079	($9,690)
Portfolio Planning & Analysis (PP&A)	$5,513	$5,562	($48)	$5,331	$5,562	($231)
Energy Efficiency	$10,711	$0	$10,711	$10,746	$0	$10,746
Grand Total CES	**$33,333**	**$36,008**	**(2,676)**	**$34,476**	**$36,008**	**(1,533)**

AMI and CSS Deferrals

Thousands ($000)

Description	Dec 2023 YTD			Explanations
	EOY Variance to Budget	Deferred Amount	Carrying Charges	
New CSS Deferred Amounts				
CSS Capital	$58,085			The overrun is due to extending the CC&B Go-Live date to October to ensure a successful Go-Live.
CSS O&M	$2,074	$799	($54)	The O&M overrun is due to extending the CC&B training program to coincide with the October Go-Live date.
AMI Deferred Amounts				
AMI Capital	($6,181)		$2,086	AMI's budget underrun is due to lower IT and equipment install costs and credits related to AMI equipment.
AMI O&M	($3,370)			The budget underrun is due to lower communication, contractor, and labor costs as well as the timing of an annual contract payment.

CSS O&M Programs

Thousands ($000)

Description	Dec 2023 YTD			2023 Year-End		
	Actuals	Budget	Variance	Target	Budget	Variance
CSS O&M	$29,743	$27,669	$2,074	$30,471	$27,669	$2,802
CSS Total	**$29,743**	**$27,669**	**$2,074**	**$30,471**	**$27,669**	**$2,802**
Grand Total CSS	**$29,743**	**$27,669**	**$2,074**	**$30,471**	**$27,669**	**$2,802**

New CSS Capital Programs

Thousands ($000)

Description	Dec 2023 YTD			2023 Year-End		
	Actuals	Budget	Variance	Target	Budget	Variance
New CSS Capital	$117,858	$59,773	$58,085	$117,895	$59,773	$58,122
New CSS Total	**$117,858**	**$59,773**	**$58,085**	**$117,895**	**$59,773**	**$58,122**
Grand Total New CSS	**$117,858**	**$59,773**	**$58,085**	**$117,895**	**$59,773**	**$58,122**

Electric Production Summary
2023 Capital Budget and Actual Spend

Thousands ($000)

Description	Rate Plan	Actual	Budget	Variation Between Actual and Budget
Environmental	$17,000	$1,592	$17,000	($15,408)
Replacement	$7,350	$2,911	$7,350	($4,439)
Risk Reduction	$2,055	$28,247	$2,055	$26,192
Total Electric Production	$26,405	$32,750	$26,405	$6,346

Electric Production
2023 Capital Budget and Actual Spend

Thousands ($000)

Project/Program Description	Rate Plan	Actual	Budget	Variation Between Actual and Budget	Variation %
Environmental					
EP Environmental - 59th Street	$500	$1,058	$500	$558	112%
EP Environmental - 74th Street	$500	$534	$500	$34	7%
EP Environmental - East River	$16,000	$0	$16,000	($16,000)	(100%)
Total Environmental	**$17,000**	**$1,592**	**$17,000**	**($15,408)**	**(91%)**
Replacement					
EP Balance of Plant Replacement Projects - East River	$400	$1,162	$400	$762	191%
EP Replacement Program - East River	$0	$193	$0	$193	100%
EP Instrumentation and Control Replacement - 74th Street	$0	$134	$0	$134	100%
EP Instrumentation and Control Replacement - East River	$1,850	$1,030	$1,850	($820)	(44%)
EP Major Equipment Replacement Projects - East River	$350	$0	$350	($350)	(100%)
EP Power Distribution Replacement Projects - East River	$4,750	$392	$4,750	($4,358)	(92%)
Total - Replacement	**$7,350**	**$2,911**	**$7,350**	**($4,439)**	**(60%)**
Risk Reduction					
EP Balance of Plant Risk Reduction Projects - EP - East River	$0	$69	$0	$69	100%
EP Civil and Structural Projects - EP - 74th Street	$0	($30)	$0	($30)	100%
EP Civil and Structural Projects - EP - East River	$2,055	$316	$2,055	($1,739)	(85%)
EP Civil and Structural - East River Unit 70	$0	$17	$0	$17	100%
EP Mechanical - East River Unit 60	$0	$6,550	$0	$6,550	100%
EP Mechanical - East River Unit 70	$0	$20,701	$0	$20,701	100%
EP Instrumentation and Control Risk Reduction Projects - EP - East River	$0	$380	$0	$380	100%
EP Power Distribution Risk Reduction - East River	$0	$245	$0	$245	100%
Total Risk Reduction	**$2,055**	**$28,247**	**$2,055**	**$26,192**	**1275%**
Total Electric Production	**$26,405**	**$32,750**	**$26,405**	**$6,346**	**24%**

Shared Services
2023 Capital Budget and Actual Spend

Thousands ($000)

Description	Rate Plan	Actual	Budget	Variation Between Actual and Budget
Facility Projects	$226,043	$166,753	$226,043	($59,289)
Strategic IT Projects	$395,811	$501,956	$395,811	$106,145
Total CECONY Shared Services Capital	$621,853	$668,710	$621,853	$46,856

Shared Services and Common
2023 Capital Budget and Actual Spend

Thousands ($000)

Project/Program Description	Rate Plan	Actual	Budget	Variation Between Actual and Budget	Variation %
Common Facilities					
3rd Ave Yard Transportation Garage Demolition	$7,372	$64	$7,372	($7,308)	(99%)
4 Irving Place - Re-Stacking (Local Law 26)	$0	($61)	$0	($61)	100%
Astoria Southwest Storm Water System Corrective Action Plan	$6,660	$3,703	$6,660	($2,957)	(44%)
Electric Vehicle Charging Infrastructure	$2,002	$4,915	$2,002	$2,913	145%
Facilities Buildings and Yards - (Energy Efficiency Program)	$20,876	$2,719	$20,876	($18,157)	(87%)
Facilities Buildings and Yards - (Roof Replacement Program)	$4,862	$2,044	$4,862	($2,818)	(58%)
Facilities Buildings and Yards All Other (Safety Environmental Regulatory)	$3,753	$4,940	$3,753	$1,187	32%
Facilities Critical Infrastructure Short Term Priority_Programs	$16,978	$20,960	$16,978	$3,983	23%
Facilities Security Upgrade Program- Tier 1	$1,501	$241	$1,501	($1,260)	(84%)
Facilities Service Center Renovations	$8,014	$6,549	$8,014	($1,465)	(18%)
30 Flatbush Lease-Exit Strategy	$0	$125	$0	$125	100%
Fuel Station Upgrades	$808	$0	$808	($808)	(100%)
McKeon Door Demolition	$0	$643	$0	$643	100%
Perimeter Enhancement Program	$1,700	$77	$1,700	($1,623)	(95%)
Pomona Facility Mutual Aid Staging Center	$0	$593	$0	$593	100%
Sherman Creek Service Center	$63,232	$201	$63,232	($63,031)	(100%)
Third Avenue New Transportation Building	$995	$0	$995	($995)	(100%)
Van Dam Relocation	$0	$6,156	$0	$6,156	100%
Van Nest Cable Office Renovation	$5,533	$3,942	$5,533	($1,591)	(29%)
Worth Street Site Master Plan	$5,296	$1,198	$5,296	($4,098)	(77%)
XM1 Tier 1 - Office Furniture	$700	$6,370	$700	$5,670	810%
XM2 - Vehicles	$66,338	$79,923	$66,338	$13,585	20%
XM3 Tier 1 - Stores Equipment	$437	$2,400	$437	$1,963	449%
XM 4 - Shop Equipment - Rollup	$361	$415	$361	$55	15%
XM5 and 15 Tier 1 - Laboratory Equipment (Testing and Chemical)	$3,181	$9,287	$3,181	$6,106	192%
XM6 Tier 1 - Tools and Work Equipment	$4,545	$8,133	$4,545	$3,587	79%
XM7 Tier 1 - Miscellaneous and Safety Equipment	$900	$1,217	$900	$317	35%
Common Facilities Total	**$226,043**	**$166,753**	**$226,043**	**($59,289)**	**(26%)**
Strategic IT					
2023 Electronic Feeder Sign On	$334	$0	$334	($334)	(100%)
IAS TM Service Layer Upgrade	$0	$28,004	$0	$28,004	100%
Technology Modernization - Mainframe Components	$0	$4,566	$0	$4,566	100%
Corporate Customer Group Application	$0	$1,200	$0	$1,200	100%
Bill Impact System Replacement	$0	$970	$0	$970	100%
New ESCO Electronic Data Interchange Enhancement Project	$0	$607	$0	$607	100%
Retail Choice Application Tech Obsolesce Modernization	$0	$347	$0	$347	100%
AMI Business Analytics	$2,002	$2,220	$2,002	$218	11%
Analytics Center of Excellence - EDAP enhancements	$1,170	$990	$1,170	($180)	(15%)
AutoCAD Phase 2 (Enginering Software & Equipment Upgrade)	$550	$398	$550	($152)	(28%)
Back Office Automation - Agent Tools	$1,333	$2,315	$1,333	$982	74%
Bill Pay Expansion	$1,000	$0	$1,000	($1,000)	(100%)
Budget System Enhancements	$750	$1,741	$750	$991	132%
Business Enablement (PACE - Digital Factory)	$1,000	$0	$1,000	($1,000)	(100%)
CCTN Program	$12,000	$12,723	$12,000	$723	6%
Central Operations Battery Monitoring Systems	$600	$0	$600	($600)	(100%)
Central Operations Condition Monitoring and Asset Health	$540	$0	$540	($540)	(100%)
Central Operations Tableau to Power Bi Migration (Const)	$575	$453	$575	($122)	(21%)
Construction Migration (Contractor Payment System Work Tracking)	$10,377	$10,707	$10,377	$330	3%
Construction Paving App (SmartApps)	$690	$568	$690	($122)	(18%)
Construction Technology Improvements	$350	$377	$350	$27	8%
Construction,Gas Mobile Migration (Angular)	$920	$859	$920	($61)	(7%)
Contingency Analysis Program (CAP) - Phase 2	$239	$0	$239	($239)	(100%)
Control Center Resiliency	$8,000	$7,339	$8,000	($661)	(8%)
Corporate Security - Company Wide Camera Rollout Program	$1,200	$1,243	$1,200	$43	4%
Corporate Security - Cyber forensic equipment	$116	$114	$116	($2)	(2%)
Corporate Security NVR and DVR replacements	$1,500	$1,574	$1,500	$74	5%
Customer Business Intelligence and Decisioning	$2,000	$1,107	$2,000	($893)	(45%)
Customer Data Sharing	$1,000	$675	$1,000	($325)	(33%)
Customer Operations Data Analytics	$10,500	$10,896	$10,500	$396	4%
Customer Operations Journey Mapping	$1,100	$1,711	$1,100	$611	56%
Customer Recommendation & Analysis Tools	$12,000	$12,016	$12,000	$16	0%
Cyber Security and NERC Compliance	$1,300	$2,653	$1,300	$1,353	104%
Cyber Security Infrastructure	$4,000	$4,031	$4,000	$31	1%
Cybersecurity	$10,717	$18,380	$10,717	$7,663	72%
Data Center Improvements (Server Farm Infrastructure)	$5,565	$4,498	$5,565	($1,067)	(19%)
Data Governance Program	$4,746	$4,212	$4,746	($534)	(11%)
Data Integration Modernization	$3,850	$3,582	$3,850	($268)	(7%)
DEMS Replacement Project	$2,800	$4,375	$2,800	$1,575	56%
Designer XI Implementation (GIS)	$0	$2,731	$0	$2,731	100%
Digital Customer Experience (DCX)	$9,048	$4,031	$9,048	($5,017)	(55%)
District Operator Task Managing System	$800	$1,000	$800	$200	25%
EBS Exa platform replacement	$5,902	$1,449	$5,902	($4,453)	(75%)
eGIS Implementation Phase 3	$35,000	$24,868	$35,000	($10,132)	(29%)
Electric - ARM Replacement (Phase 0)	$1,200	$0	$1,200	($1,200)	(100%)

Shared Services and Common
2023 Capital Budget and Actual Spend continued

Thousands ($000)

Project/Program Description	Rate Plan	Actual	Budget	Variation Between Actual and Budget	Variation %
Electric - ARM Replacement	$0	$1,323	$0	$1,323	100%
Electric Technology Empowerment	$0	$2	$0	$2	100%
Electric WMS – EBS Integration Redesign	$0	$384	$0	$384	100%
End User Computing	$3,356	$1,564	$3,356	($1,792)	(53%)
Enterprise Architecture Modernization	$600	$235	$600	($365)	(61%)
Enterprise Unifier Software Project - Phase 2	$5,500	$0	$5,500	($5,500)	(100%)
ERM - Archer Software	$1,798	$662	$1,798	($1,136)	(63%)
Forecasting Services Compliance with Market Changes and MetrixIDR Upgrades	$408	$158	$408	($250)	(61%)
Fraud Data Analytics Platform	$1,700	$305	$1,700	($1,395)	(82%)
GIS Implementation	$0	($142)	$0	($142)	100%
Grid Mod Data Analytics Use Cases	$4,484	$4,265	$4,484	($218)	(5%)
Grid Modernization Communications Infrastructure Phase 2	$16,002	$14,587	$16,002	($1,415)	(9%)
Hitachi Password Manager Ugrade	$665	$113	$665	($552)	(83%)
Integration of virtual reality into Substation Operating Orders	$800	$0	$800	($800)	(100%)
IT System Testing COE	$2,500	$2,411	$2,500	($89)	(4%)
Learning and Inclusion Digital Learning Transformation	$1,000	$937	$1,000	($63)	(6%)
Maximo Consolidation Program Phase 1	$15,493	$29,826	$15,493	$14,334	93%
Mobility	$10,000	$8,231	$10,000	($1,769)	(18%)
New Customer Service System	$59,773	$117,858	$59,773	$58,085	97%
New Customer Service System Enhancements	$0	$774	$0	$774	100%
nMarket upgrade to accomodate REV	$991	$1,505	$991	$514	52%
NYISO - PJM Energy and Capacity Daily Reconciliations - TODRS	$414	$399	$414	($15)	(4%)
NYISO revenue metering daily reports	$268	$464	$268	$196	73%
Obsolete Oracle GRC Software Replacement and Enterprise SoD Tool	$59	$76	$59	$17	29%
OCS Implementation for HeavyBid and P6 Loader	$297	$0	$297	($297)	(100%)
OMS IT System Hardening	$3,944	$5,238	$3,944	$1,294	33%
Operation Management System at ECC	$767	$785	$767	$18	2%
Operational Technology Network Phase II	$1,000	$1,356	$1,000	$356	36%
Oracle HCM Cloud Implementation	$19,366	$38,051	$19,366	$18,685	96%
Outage Communication Program	$1,013	$1,039	$1,013	$27	3%
Outage Management System - Phase Four	$9,169	$10,713	$9,169	$1,543	17%
Phased Replacement of Legal Technology	$272	$0	$272	($272)	(100%)
PowerPlan Application Upgrade 2021	$0	$1,091	$0	$1,091	100%
Privacy Readiness Program	$5,000	$4,461	$5,000	($539)	(11%)
Protective Relay Settings Repository	$5,000	$4,818	$5,000	($182)	(4%)
Rate Case Enhancements	$1,263	$857	$1,263	($406)	(32%)
REV DER Forecasting Application	$2,730	$537	$2,730	($2,193)	(80%)
Sales and Use Tax integration Sabrix Vertex	$500	$0	$500	($500)	(100%)
ServiceNow Upgrade – ASM and APM Modules	$1,225	$1,119	$1,225	($106)	(9%)
Site Safety System Enhancements	$350	$0	$350	($350)	(100%)
Soft Tissue Injury Prevention Project	$300	$0	$300	($300)	(100%)
Substation Technology Improvements Program	$1,400	$2,185	$1,400	$785	56%
Technology Currency and Sustainability	$3,949	$1,254	$3,949	($2,695)	(68%)
Technology Modernization Program	$32,000	$29,397	$32,000	($2,603)	(8%)
TNVS WEB	$380	$448	$380	$68	18%
Utilizing AMI data for firm and interruptible gas marketer forecasting and RCIS migration	$1,080	$349	$1,080	($731)	(68%)
Virtual Assistants	$2,390	$506	$2,390	($1,884)	(79%)
WMS Sustainability Project	$2,600	$2,253	$2,600	($347)	(13%)
XM10 Tier 1_2 Computer Equipment Critical Infrastructure	$14,269	$23,266	$14,269	$8,997	63%
XM8 Telecommunications Equipment Priority 1	$2,963	$3,373	$2,963	$410	14%
Other IT Projects	$0	$1,394	$0	$1,394	100%
Total Strategic IT Projects	**$395,811**	**$501,956**	**$395,811**	**$106,145**	**27%**

2023 Capital Actual vs. Budget Variation Explanations

Thousands ($000)

	Actual	Budget	Variation (%)	Explanations
S&TO				
Transmission Feeder Failures	($7)	$15,000	(100%)	Feeder 71 Failure occurred on 12/24/2023
Pipe Enhancement Program	$41,674	$28,000	49%	Additional trench footage completed. 4,770 TF completed in 2023
Emergent Transmission Reliability Program	$6,781	$0	100%	38M41 Outage for Cable Section Replacement complete
Feeder38R51/38R52 Replacement Project	$115,302	$144,244	(20%)	Delayed access to landfill. Full construction continues. Energization of first feeder expected February 2024
AMTRAK PSA-OAK	$0	$5,000	(100%)	Master Services agreement completed. Transaction agreement in progress
Queensboro Bridge Risk Mitigation Project	$72	$20,000	(100%)	Geotechnical study in progress. Procurement of boring vendor in progress.
Rainey to Corona II 138KV Feeder	$52,149	$63,700	(18%)	Delay with milestone payments for equipment purchases and progress payments to the EPC contractor.
Gowanus To Greenwood 138KV Feeder	$28,517	$34,000	(16%)	Delays with factory acceptance milestone payments for the transformer and PAR. Delays in deliveries and payments for equipment procurement.
Goethals to Fox Hills - 138KV Feeder	$89,108	$148,069	(40%)	Feeder re-route due to property easement challenges. Delays in deliveries and payments for equipment procurement.
Public Improvement	$25,533	$34,770	(27%)	The project is under budget due to timing of the city work.
Substation Operations				
EH&S Risk Mitigation	$3,341	$15,532	(78%)	Resources diverted away from installing power supplies at recently installed moats to other higher priority projects. Additionally, delays in MOV (motor operated valve)packages associated with Oil Water Separators at two substations
Disconnect Switch Capital Upgrade Program	$3,060	$5,175	(41%)	Rainey was planned for (4) but now deferred into 2024. Other planned work is now deferred into 2024 due to outage constraints.
Reinforced Ground Grid Program	$1,880	$6,100	(69%)	Resource constraints - assigned to more urgent, outage related work.
Relay Protection Communication Upgrades	$4,282	$16,045	(73%)	Early 2023 work funded the IT CCTN Program. Also, Staten Island Fiber Ring delay in equipment procurement.
Substation Transformer Replacement Program	$136,688	$77,500	76%	Increase in number of Transformer purchases to address future needs, taking into account longer manufacturer lead time.
Protection, Automation and Control Program	$31,435	$21,000	50%	Acceleration of work continues on the Data Diode project and the Sherman Creek automation project.
Gas Insulated Substation Replacement Program	$20,719	$11,000	88%	Greater than planned work associated with the W.49 St 138kV.
Area Substation Phased Equipment Program	$2,591	$15,000	(83%)	Large amount of work is planned for the 63rd St. Station and will continue into 2024.
Failed Substation Transformer Program	$26,099	$46,500	(44%)	No failures in 2023; primarily carry-over from previous years.
Hellgate Dock Refurbishment (SSO portion)	$16	$15,600	(100%)	Permit delays has delayed Construction start date to 2024 vs. original plan of 2023.
Vinegar Hill DSS	$16,290	$33,026	(51%)	Some work deferred into 2024 due to delayed delivery of Switchgear and transmission cable.
Newtown TR4 and 138kV Feeder 38Q05 from Vernon	$3,246	$10,000	(68%)	Timing - long lead equipment underway. Cable to be purchased by Transmission Contractor under EPC; expected to occur in Q4 2024.
Failed Substation Equipment Other than Transformers	$15,575	$11,500	35%	General provision for various failed equipment types not covered under any Program.
Emergent Load Relief	$6,492	$500	1198%	Primarily due to Fresh Kills 21214 Load Relief work.
Idlewild	$300	$10,204	(97%)	Provision for preliminary Engineering underway.
Eastern Queens	$628	$8,848	(93%)	Provision for preliminary Engineering underway.
Brooklyn Clean Energy Hub	$62,308	$81,000	(23%)	Primarily due to timing of Purchase Order milestone payments on the Gas Insulated Switchgear.
Electric Distribution				
New Business Capital	$223,423	$172,382	30%	For New Business Retail and Majors, the volume of work continued to be very strong and we continued to fund this work above the original budget throughout the year. The fewer ICS and mobilizations helped facilitate the crewing availability continues to allow us to target this work. The secondary reinforcement work associated with both retail and majors new business job continues to be required and predominantly seen in Brooklyn, Queens and the Bronx. Projects in these boroughs are seeing a higher cost per service because of greater system reinforcement required to sustain the additional loads.
Light Duty Electric Vehicle Make-Ready Program	$2,918	$26,919	(89%)	Developers continue to move forward with locations deemed service adequate far more quickly than for locations that require utility-side construction. We are seeing a shift increasing the spend compared to this time last year because more and more of the service adequate locations have been constructed, and developers are moving on toward locations that do require some reinforcement on our end. We expect that trend to continue, however, with supply chain issues impacting developers in addition to the desire to build rapidly at locations with spare capacity, it is very difficult to gauge how quickly the construction and spending will increase.
Primary Cable Replacement (OAs, FOTs, C&D Fault)	$120,001	$98,715	22%	With fewer ICS events and mobilizations due to minimal weather events throughout the year, the number of events is 150 events lower that the 3, 4 and 5 year average. This is consistent with expecations as fewer winter and summer weather events leads to lower OA & FOT events. The spending in this category has not followed the same trend. The cost analysis has revealed a few differences between 2022 and 2023. There was additional conduit costs in BQ and Manhattan, and parking and flagging costs increased as compared to 2022. Overrun was predominantly in Manh and less extent in BQ and BW.

2023 Capital Actual vs. Budget Variation Explanations

Thousands ($000)

	Actual	Budget	Variation (%)	Explanations
Secondary Open Mains	$141,798	$128,706	10%	Fewer ICS events and mobilizations due to minimal weather events throughout the year has helped keep the spending in-line with the budget. Overrun is concentrated in BQ and BW offset by underrun in Manhattan. The 2023 backlog of Rapid, Priority 1's and 2's was lower at YE as compared to 2022. Incoming open mains and completions in 2023 were lower however, the 2023 unit cost per open main was higher compared to 2022. Overall, 2023, spending is $16M less than year-end 2022.
Selective Undergrounding	$11,969	$25,000	(52%)	Year-end variation to budget was due to project delays at the beginning of 2023. The pilots in Staten Island, Brooklyn, Queens and Westchester were in flight at year end. All of the projects will continue into 2024. The SI pilot civil work was all completed in late 3rd quarter and all other projects started civil construction in the 4th quarter. The YE target was adjusted at the 10+2 EGC meeting however several delays were experienced with both Westchester projects and the Staten Island project associated with feeder 33R27 and 33R30. The Westchester delays were requests for information from both the town and residents centered around the final placement of the new padmount transformers as well as other construction activities. The Staten Island project was slowed due to coordination between Electric and Substations due to the on-going substation work at Fox Hills.
Streetlights (Including Conduit)	$23,084	$27,235	(15%)	Consistent with the milder weather, spending was lower as compared to the 2022.
Targeted Direct Buried Cable Replacement	$11,982	$7,501	60%	Milder winter allowed for spending in BW and SI to continue to target this work. The Year End targets for BW and Staten Island were increased throughout the year. YE 2023 spending was 1.5 times higher than the 2022 spending.
Transformer Installation	$44,633	$51,226	(13%)	Throughout 2023, our overall backlog of Banks-Off remained mainly stable and we were able to reduce our priority 1 backlog by 27%. Supply chain issues continued to affect our ability to advance our goals in this program. Due to supply chain issues, we have strategically decided to focus on the highest priority backlog. From a cost and performace comparision, we spent $7M less than 2022 while having 12% less incoming and 14% less completions.
Brownsville Area Load Relief	$19,922	$35,264	(44%)	This work is associated with the 60MW Ridgewood to Maspeth load transfer. Bid packages awarded for extensive civil work to commence in end of 3rd quarter. Additional work has been performed involving rodding, roping of vacant conduits. To upgrade existing Maspeth feeders, some advanced feeder work completed in spring and underway in the fall 2023. YE target adjusted based on project teams working estimates throughout the year.
Network Transformer Relief	$13,615	$10,782	26%	Pre-summer load relief work in M, BQ and BW is completed.
NonNetwork Fdr Relief (Open Wire)	$3,545	$6,278	(44%)	Pre-summer load relief work in SI, BQ and BW is completed. YE target allows for any advanced pre-summer 2024 load relief.
Primary Cable Crossing (B/W City Island, Riverdale, Croton River, and B/Q Flushir	$1,315	$21,501	(94%)	The dual southerly crossing option has been selected. The northerly crossing is still being pursued and designed in parallel as NYC Parks Department and NYC EDC development have expressed interest to allow for construction. Plan is to micro-tunnel under the Harlem River and install two sperate crrossing bundles to connect to existing Riverdale feeders on Bronx side. Work continues with Metro-North to design two receiving manholes and conduit systems to connect at the Major Deegan manhole and the second system to run on easement along MetroNorth tracks to connect north at the University Parks Bridge. Minimal construction activity expected for remainder of the year. High level discussion continue with NYC DOT, Parks and other agencies to obtain required permits to work on Manhattan and the Bronx side.
Primary Feeder Relief	$1,435	$6,176	(77%)	Pre-summer 2023 load relief work in M, BQ and BW is completed
West Bronx - Randall's Island Reconfiguration Program	$23,506	$16,100	46%	Project is well under way with civil work, cable pulling and dead work splicing. Project team met the Year-End goal which allows for the commencement of feeder outages to begin in late January/early February through May 2024 in order to energize four of the six new feeders by June 1, 2024. Remaining two feeders to be energized by year end 2024. The 2023 YE spending was inline with the YE Target.
Williamsburg Network Improvement	$32,835	$17,800	84%	This multi-phase project is well underway. Phase 1 - completed and first two feeders were energized June 1st, 2023. The civil work required around the Vinegar Hill and Water Street substations for Phases 1, 2, 3 and 4 was completed in May. Currently, Phase 2 civil construction commenced in August to complete civil, cable installation and all splicing in order to energize the 3rd and 4th new feeders by June 1, 2024. The area of work for phase 2 is below the BQ Expressway and DOT stopped portions of the work due to the DOT's structural work on the overpass which caused a slight delay which affected the YE target and spend. Phase 3 engineering work has commenced during summer 2023 in order for survey work to occur in Q3 and Q4 2023.
Yorkville Crossings and Feeder Relief	$2,740	$16,000	(83%)	High level discussions continue between the company and NYC Parks as well as the NYC Mayor's office. As of December 31st, this project is held-up due to NYC Parks Department not approving permits at the Manhattan side of the project. A payment was made in September to extend the lease for the Bronx property. The cable purchase for December did not occur due to delays with the schedule delivery by Prysmian Cable. The $1.3M cable purchase did not occur yielding the underrn from the YE Target.
Critical Facility Program	$3,561	$9,001	(60%)	BW and SI underrun and BQ on budget led to overall underrun. Crews were shifted towards non-network reliability work especially in Staten Island, the Bronx and Westchester.
Non-Network Reliability	$55,236	$41,313	34%	The milder weather pattern with fewer ICS events and mobilizations throughout 2023 has helped keep the spending in-line with the budget with higher completions by the BQ and Staten Island field crews. The shift of additional contractor crews to Westchester in the 3rd and 4th quarter helped meet the Westchester RPM commitment. Work in BW targeted the Bronx as well as Westchester which drove a larger portion of the YE overrun.
Primary Feeder Reliability	$41,287	$50,000	(17%)	The bulk of the work occurred in the Bronx, Brooklyn and Queens networks involving FOD, Underground and Cable crews. This work is performed predominantly between January through May and September through December. The milder winter weather in early and late part of 2023 allowed for the feeder outage work to progress in order to complete this work. The mini-heatwave of September 5th through 9th along with the torrential rain on September 29th causing significant OA's delayed our early execution of our Fall feeder scheduling. For comparison, our YE 2022 spend was $18.85M as compared to our 2023 spend of $41.29M.
Transformer Vault and Structures Modernization	$59,214	$33,051	79%	The work in this program is spending above well above the 2022 YE spend of $36M. The YE target was increased throughout the year via the EGC meetings. A monthly working group between FP&A, DE, Regional Engineering and Construction Management is looking closer to better understand the spending, priorities and drivers in this program. These meetings will continue into 2024 and a revision of the EO-specification is planned for early Q2-2024. The intent is to better prioritize the work between our transformer vaults vs. our manholes and service boxes which should help control the spending in this category in 2024.
Underground Secondary Reliability Program	$25,314	$22,001	15%	Spending continued is BW, BQ and Manh as we target the replacement of vintage secondary cable. This work is also being identified as part of new business work in the Bronx, Brooklyn, Queens and Manhattan. Distribution Engineering also identified 70 critical manholes for the field to target the replacement of this vintage cable. Actual spend met the YE Target.

2023 Capital Actual vs. Budget Variation Explanations

Thousands ($000)

	Actual	Budget	Variation (%)	Explanations
USS Projects - 4kv USS Switchgear House Replacement	$2,186	$10,731	(80%)	The lead time for the switchgear has grown to greater than one year from order placement to delivery. Grant City No 2 4kv unit substation switchgear was replaced in the start of 2023. Late equipment deliveries due to supply chain issues persist however two orders for 6 switchgear houses have been approved and placed. The first order was not made in December and the second order delivery target is late Q1/early Q2 of 2024. The YE target was adjusted and underrun was due to 1st order December delivery delayed and progress payment for 2nd order not being fulfilled.
Wainwright - Willowbrook Stepdown Transformer Installations	$811	$8,520	(90%)	Phase 1 – Two Stepdowns energized. Two Stepdowns vault structures are built, street conduit is installed, and cable installs nearly complete. Final stepdown had delays initially due to environmental surveys. At YE-2023, the surveys are complete and currently pending National Grid gas main location. Phase 2 – Permits for two stepdowns locations are expected to be approved by the DOT by Feb 1, 2024. Two vaults are still pending boring required in order to submit permits. Final location is pending test pits and borings. Due to the prior issues with the DOT and the late start, the YE target were adjusted.
Transformer Purchases	$175,815	$135,999	29%	The procurement and technical design teams continue to work closely with existing transformer manufacturers, have placed orders with new manufacturers, and continue outreach and development with additional manufacturers. Supply Chain issues persist and the process established to prioritize network transformers is ongoing, using size and class to prioritize transformer replacements as well as priorities and alternatives for new business commitments. The padmount transformers, especially larger kVA units and 3-phase units, are still a challenge and additional vendors should provide improvement in 2024. The Unit Price increase have skewed the dollar spend as compared to historical. The YE 2023 target was adjusted to allow for purchases to continue throughout the rest of the year.
Public Improvement	$137,890	$150,543	(8%)	The underrun is driven by the timing of the city work.
Electric Production				
EP Environmental - East River	$0	$16,000	(100%)	Actual spend for the Fuel Oil Conversion project is reflected in the EP Mechanical - East River Unit 70 Program below.
EP Mechanical - East River Unit 60	$6,550	$0	100%	Unit 60 Overhaul project was prioritized in 2023 after the budget was finalized.
EP Mechanical - East River Unit 70	$20,701	$0	100%	No. 2 Fuel Oil Conversion project; funds shifted from EP Environmental - East River Program. Tank 2 complete - Tank 1 start date is Spring 2024.
Customer Energy Solutions - Electric				
MR DER for LI	$0	$5,900	(100%)	Delayed start due to routing to proceeding outside of Rate Case; O&M work initiated with capital work to begin in 2024. Project collected via surcharge and not included in base rates.
ADMS/DERMS	$13,511	$15,485	(13%)	Phase 0 work completed; Initiation of work on multi-phase Enterprise solution ramping up with budget underrun due to delay onboarding vendor and complex procurement agreements to capture multiple project workstreams.
AMI	$45,285	$51,466	(12%)	AMI's budget underrun is due to lower IT and equipment install costs and credits related to AMI equipment.
Customer Energy Solutions - AMI				
AMI	*$0*	*$0*	100%	The budget underrun was driven by lower than expected equipment installation costs, lower labor/contractor support costs, the timing of equipment deliveries, and the project contingency that was shifted to 2023. The YTD underrun was also driven by the timing and lower cost of IT contract payments
Shared Services and Common Facilities and Field Services				
Astoria Southwest Storm Water System Corrective Action Plan	$3,703	$6,660	(44%)	Year-end underrun is due to lower than budgeted spend based on weather and procurement related delays.
Facilities Buildings and Yards - (Energy Efficiency Program)	$2,719	$20,876	(87%)	Year-end underrun is due to supply chain related delays.
Facilities Critical Infrastructure Short Term Priority_Programs	$20,960	$16,978	23%	Year-end overrun is due to emergent projects as well as 2022 carryover projects
Facilities Service Center Renovations	$6,549	$8,014	(18%)	Year-end underrun is due to Engineering design challenges.
Van Dam Relocation	$6,156	$0	100%	Cross commodity funding for this project was approved via the Governance process
Sherman Creek Service Center	$201	$63,232	(100%)	Year-end underrun due to easement related delays which were recently approved. Project expected to start in 2024.
Van Nest Cable Office Renovation	$3,942	$5,533	(29%)	Year-end underrun is due to lower than estimated cost and early project completion.
Worth Street Site Master Plan	$1,198	$5,296	(77%)	Year-end underrun is due to engineering design changes. Milestone schedule for this project has been revised.
Strategic IT Projects				
Cybersecurity	$18,380	$10,717	72%	overrun due to SIEM expansion licenses and in September for Sandbox replacement.
Data Center Improvements (Server Farm Infrastructure)	$4,498	$5,565	(19%)	Underspend in budget primary due to global supply chain issues for some equipment/material and to evolving changes in the data center strategy.
Digital Customer Experience (DCX)	$4,031	$9,048	(55%)	underrun due to a focus on CC&B implentation and integration of the platform.
EBS Exa platform replacement	$1,449	$5,902	(75%)	The project encountered cybersecurity-related reviews for external connectivity outside the organization, which led to a delay in the discovery and planning phase.
eGIS Implementation Phase 3	$24,868	$35,000	(29%)	Advance payment of $10M at end of 2022 resulted in 2023 Year End underrun.
Maximo Consolidation Program Phase 1	$29,826	$15,493	93%	Variance of due to the acceleration of 2024 planned work.
Mobility	$8,231	$10,000	(18%)	Underrun of $1.8 M is due to recent turnover on the Digital Factory team. Additionally, the prioritizing of key contractor resources for knowledge sharing purposes impacted the project's total spend.
New Customer Service System	$117,858	$59,773	97%	Overrun is due to extending the October planned go-live date in oerder to ensure a successful go-live.

2023 Capital Actual vs. Budget Variation Explanations

Thousands ($000)

	Actual	Budget	Variation (%)	Explanations
OMS IT System Hardening	$5,238	$3,944	33%	Overrun of $1.3M was due to the purchase of cloud based solution that will provide map based insights and improved decision-making capabilities for the utility and emergency responders, municipal leaders, and other key stakeholders.
Oracle HCM Cloud Implementation	$38,051	$19,366	96%	The primary driver for the overrun is the delay to go-live date due to System Integrator performance.
Outage Management System - Phase Four	$10,713	$9,169	17%	Overrun is due to purchase of additional testing hardware for the OMS upgrade as well as additional vendor work for the Oracle Field Service onboarding portal and for the Oracle Utility Analytics upgrade to version 2.8
Privacy Readiness Program	$4,461	$5,000	(11%)	Underrun due to delay onboarding of system integrator.
General Equipment				
XM1 Tier 1 - Office Furniture	$6,370	$700	810%	
XM2 - Vehicles	$79,923	$66,338	20%	
XM5 and 15 Tier 1 - Laboratory Equipment (Testing and Chemical)	$9,287	$3,181	192%	
XM6 Tier 1 - Tools and Work Equipment	$8,133	$4,545	79%	
XM10 Tier 1_2 Computer Equipment Critical Infrastructure	$23,266	$14,269	63%	Additional equipment required for hires/replacements as well as additional networking equipment, hardware, for project lifecycle planning.

Budget/Rate Plan vs. Actual Capital Spending Explanations (New Programs/Projects)

Thousands ($000)

	Rate Plan	Actual	Budget	Explanation
S&TO				
Rainey to Corona - New 138KV Feeder	$0	$1	$0	Carryover project
Emergent Transmission Reliability Program	$0	$6,781	$0	Carryover project
Transmission Resiliency System	$0	($977)	$0	Carryover project
Transmission Operations Other - System Expansion Projects	$0	$1	$0	Carryover project
Substation Operations				
Jamaica Install Additional Breakers in Bus Section 2E & 3W	$0	$3	$0	Carryover project
Ramapo Install New Surge Arrestors	$0	$430	$0	Carryover project
Mobile Control Center	$0	$518	$0	Carryover project
Elmsford 138kV Disconnect Switches	$0	$813	$0	Carryover project
Willowbrook-Install New Breakers	$0	$34	$0	Carryover project
Parkchester 2 Replace Limiting 13kV Bus Sections No. 2	$1,000	$125	$0	Carryover project
E. 179th Street Switchgear and Bus Replacement	$0	$4,814	$0	Carryover project-completion of Program.
Astoria Feeder 34124L Cable Bypass	$0	$181	$0	Carryover project
Storm Hardening	$0	$239	$0	Carryover project-completion of Program.
Bensonhurst 38B15T and TR10 Installation	$0	$1,831	$0	New Project-See White Paper
Electric Distribution				
DG Projects	$0	$2,723	$0	Timing of transfers between Balance Sheet (OWIP) and Capital (CWIP) accounts. Distributed Generation jobs when trued up should net out to zero in the Capital accounts.
BQDM Non Traditional	$0	$1	$0	Carryover project
Woodrow Load Area	$0	$12	$10	Carryover project
28th Street- Flush	$0	$0	$0	Carryover project
OH & UG Training Yards - Victory Blvd	$0	$5	$0	Carryover project
Security Fencing for Unit Substations on SI	$0	$608	$0	Carryover project
EV IT Platform	$0	($19)	$0	Budget transferred to ED from CES for this project, which originated in 2021
Remodel Ladies Locker Room at Transformer Shop	$0	$102	$0	New Project - See White Paper attached
Nevins St. Battery Storage	$0	($1,249)	$0	Project was cancelled and the budgeted amount was used to fund projects outside of Electric Transmission and Distribution's portfolio.
Other System Expansion	$0	$150	$0	Carryover project
460V Network Protector Replacement	$0	$1,797	$0	Carryover project
120/208V Non-Submersible Unit Replacement	$0	$1	$0	Carryover project
Overhead Equipment Upgrades	$0	$95	$0	Carryover project
Crown Heights Network Split	$0	$306	$0	New Project - See White Paper attached
Customer Energy Solutions - Electric				
Brownsville Battery Storage System	$0	$424	$0	New project - see White Paper attached
Pole Mounted Energy Storage System	$0	$669	$0	New project - see White Paper attached
Commercial Managed Charging IT & Data Tools	$0	$1,292	$0	New project - see White Paper attached
Energy Efficiency Benchmarking	$0	$226	$0	Carryover project
REV-Demonstration Project	$0	($279)	$0	Carryover project
Electric Production				
EP Replacement Program - East River	$0	$193	$0	Carryover project
EP Instrumentation and Control Replacement - 74th Street	$0	$134	$0	Carryover project
EP Balance of Plant Risk Reduction Projects - EP - East River	$0	$69	$0	Carryover project
EP Civil and Structural Projects - EP - 74th Street	$0	($30)	$0	Carryover project
EP Civil and Structural - East River Unit 70	$0	$17	$0	Carryover project
EP Power Distribution Risk Reduction - East River	$0	$245	$0	Carryover project
EP Instrumentation and Control Risk Reduction Projects - EP - East River	$0	$380	$0	Carryover project
Shared Services ***Facilities and Field Services***				
4 Irving Place - Re-Stacking (Local Law 26)	$0	($61)	$0	Carryover project
30 Flatbush Lease-Exit Strategy	$0	$125	$0	New project - Initial engineering and planning for project (see white paper attached)
McKeon Door Demolition	$0	$643	$0	Carryover project
Pomona Facility Mutual Aid Staging Center	$0	$593	$0	Carryover project
Shared Services				
Facilities and Field Services (cancelled/deferred/delayed)				
Fuel Station Upgrades	$808	$0	$808	Deferred project
Third Avenue New Transportation Building	$991	$0	$995	Deferred project

Budget/Rate Plan vs. Actual Capital Spending Explanations (New Programs/Projects) continued

Thousands ($000)

	Rate Plan	Actual	Budget	Explanation
Strategic IT Projects (New Projects)				
IAS TM Service Layer Upgrade	$0	$28,004	$0	New Project - See White Paper
Technology Modernization - Mainframe Components	$0	$4,566	$0	New Project - See White Paper
Corporate Customer Group Application	$0	$1,200	$0	New Project - See White Paper
Bill Impact System Replacement	$0	$970	$0	New Project - See White Paper
New ESCO Electronic Data Interchange Enhancement Project	$0	$607	$0	New Project - See White Paper
Retail Choice Application Tech Obsolesce Modernization	$0	$347	$0	New Project - See White Paper
Electric Technology Empowerment	$0	$2	$0	New Project - See White Paper
Electric WMS – EBS Integration Redesign	$0	$384	$0	New Project - See White Paper
New Customer Service System Enhancements	$0	$774	$0	New Project - See White Paper
Strategic IT Projects (cancelled/deferred/delayed)				
2023 Electronic Feeder Sign On	$334	$0	$334	Cancelled project
Bill Pay Expansion	$1,000	$0	$1,000	Deferred project
Central Operations Battery Monitoring Systems	$600	$0	$600	Deferred project
Central Operations Condition Monitoring and Asset Health	$540	$0	$540	Deferred project
Contingency Analysis Program (CAP) - Phase 2	$239	$0	$239	Deferred project
Enterprise Unifier Software Project - Phase 2	$5,500	$0	$5,500	Deferred project
Integration of virtual reality into Substation Operating Orders	$800	$0	$800	Deferred project
OCS Implementation for HeavyBid and P6 Loader	$297	$0	$297	Deferred project
Phased Replacement of Legal Technology	$272	$0	$272	Deferred project
Sales and Use Tax integration Sabrix Vertex	$500	$0	$500	Cancelled project
Site Safety System Enhancements	$350	$0	$350	Deferred project
Soft Tissue Injury Prevention Project	$300	$0	$300	Deferred project
Strategic IT Projects (carryover)				
PowerPlan Application Upgrade 2021	$0	$1,091	$0	Carryover project
2021 Electronic Feeder Sign On	$0	$57	$0	Carryover project
AMR Saturation - Other Areas	$0	$1	$0	Carryover project
ARCOS SaaS Products (Workbench)	$0	$14	$0	Carryover project
Business System Sustainability Program	$0	$16	$0	Carryover project
Communications Infrastructure (Grid Mod)	$0	$213	$0	Carryover project
Construction - Fraud Risk Mitigation Program	$0	$11	$0	Carryover project
Construction - Survey Mapping Repository	$0	$36	$0	Carryover project
Control Center Operational Segmentation- Islandnet	$0	$48	$0	Carryover project
CPMS Customer Knowledge Self-Self Service	$0	$485	$0	Carryover project
Datasplice Upgrade to Version 6	$0	$1	$0	Carryover project
Designer XI Implementation (GIS)	$0	$2,731	$0	Carryover project
Distribution Electric Control Center Cybersecurity	$0	$95	$0	Carryover project
Engage Platform Phase IV	$0	$32	$0	Carryover project

2023 WHITE PAPERS

SUBSTATIONS WHITE PAPERS

Central Operations / Substation Operations
2024

1. Project / Program Summary

Type: ☒ Project ☐ Program	**Category: ☒ Capital ☐ O&M**
Work Plan Category: ☐ Regulatory Mandated ☒ Operationally Required ☐ Strategic	
Project/Program Title: Bensonhurst No.2 TR10 / Emergent Load Relief Program	
Project/Program Manager: Various	**Project/Program Number (Level 1):** 8ES3700/ 10035263
Status: ☒ Planning ☐ Design ☐ Engineering ☐ Construction ☐ Ongoing ☐ Other: _____	
Estimated Start Date: January 2023	**Estimated Date In Service: May 2025**
A. Total Funding Request ($000) **Capital: $36,000** **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 fifth 138/27kV transformer at the Bensonhurst No.2, 27kV Substation and a 138kV tie to feeder 38B15 at the Bensonhurst No.1 Substation.

Engineering and long lead equipment procurement will begin in 2023 for this project and construction is expected to begin in 2024. The in-service date of this project is May 2025.

The project will be funded under the Emergent Load Relief Program, which provides funding to cover any small-scale emergent load relief projects that may appear while updating Ten-Year Load Relief Plans. Project types that typically are funded via this program include transformer cooling projects (both fan and water-cooling projects), bus cooling, capacitor bank installations, and bus upgrades.

Justification Summary:

Forecasted loads for the Bensonhurst No.2 Substation are expected to exceed the station's design capability by the summer of 2025. Load projections in the 2023 – 2032 Ten Year Load Relief Program indicate that the station's capability will exceed, with overloads increasing as the load continues to grow in ensuing years. To add capacity at Bensonhurst No.2 Substation and to increase capability, it is recommended that a fifth 138/27kV transformer be installed at Bensonhurst No.2 along with a connection to existing 138kV feeder 38B15 from the Bensonhurst No.1 Substation. The rapid load growth in the network over the next few years is primarily driven by electrification, new business development and by associated economic activity in the area that is expected to continue. This project adds 135 MW of capability to Bensonhurst No.2 Substation and is determined to be a sensible approach in anticipation of expected increased customer heating electrification and the Company's clean energy commitment to meet NYS CLCPA goals.

While all known load relief projects that were developed in the Company's latest Ten-Year Load Relief Program are being requested as individual project lines in the Substation Operations Capital Budget, additional projects are required because of a new load forecast or post-summer analysis. In these cases, load relief measures and/or reliability work may be required to meet the forecasted demand for the following summer.

Since projects of this nature are a result of post summer experience, they are not specifically included in the prior year's funding. This program line provides funding for projects of this type so that work can be done quickly, to have load relief measures in place prior to the next summer.

Relationship to Broader Company Plans and Initiatives (e.g. Long-Range Plans, CLCPA Initiatives, Risk Mitigation):

The operational measures and system improvements implemented with this project would be sufficient in managing overload constraints within the system and satisfy reliability, resiliency, safety, and compliance regulations. This program affects the Enterprise Risks loss of a substations and Equipment failures.

2. Supplemental Information

Alternatives:

The alternative solution considered is to provide at least 37 MW of REV non wires solutions (NWS) to defer any traditional infrastructure project to beyond 2032. All system expansion projects will be reviewed for NWS in accordance with the suitability criteria outlined in the Distributed System Platform (DSP). However, future demand forecasts are subject to change based on actual peak summer load conditions as well as economic trends and are likely to present significant challenges in achieving required customer side load reductions to provide adequate solutions in the face of rapid network load growth. Changes in future forecasts and planning may result in the advancement of addressing system overloads.

Risk of No Action:

If this project is not pursued, there is a high risk of overloading the substation equipment during peak load conditions. Exceeding the rated capacity of the substation could result in load shedding if contingencies occur during peak loading conditions resulting in customer outages, increasing the risk of equipment failure, and adversely impacting the community served, as well as encountering the potential inability of maintaining reliable system power flow controls, system reliability and resiliency concerns.

Non-Financial Benefits:

This project will provide the necessary load relief for overloaded feeders and equipment, which will ensure the continuity of reliable service in the areas served by the Bensonhurst No.2 Substation.

Summary of Financial Benefits and Costs:

N/A

Technical Evaluation / Analysis:

Forecasted loads for Bensonhurst No.2 in 2026 are approximately 424 MW, which exceed the station's 416 MW capability by 8 MW or 2%. The overloads will increase in subsequent years as network load continues to grow. The load growth in the Flatbush and Brighton Beach Networks supplied by Bensonhurst No.2 Substation is mostly due to electrification and growth in economic activity. To accommodate the forecasted load under a design N-1 contingency, a new 138/27kV transformer and new 138kV supply feeder are required at the Bensonhurst No.2 Substation.

Area Substation Planning periodically evaluates each network projected peak loads for a ten-year period and compares those loads to the substation and transmission load pocket capacities. If any shortfalls are noted, potential methods for mitigating loads are developed, evaluated, and an overall best solution is chosen to mitigate this shortfall.

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 2017	**Actual 2018**	**Actual 2019**	**Actual 2020**	**Historic Year** (O&M only)	**Forecast 2021**
Capital	0	0	0	0		0
O&M						
Retirement	0	0	0	0		n/a

Total Request ($000):

Total Request by Year:

	Request 2023	**Request 2024**	**Request 2025**	**Request 2026**	**Request 2027**
Capital	**$13,000**	**$13,000**	**$10,000**		
O&M*					
Retirement					

Capital Request by Elements of Expense:

EOE	**2022**	**2023**	**2024**	**2025**	**2026**

Labor	0	0			
M&S	0	0			
Contract Services	0	0			
Other	0	0			
Overheads	0	0			
Subtotal					
Total	0	$0			

Total Gross Cost Savings / Avoidance by Year:

	2023	**2024**	**2025**	**2026**	**2027**
O&M Savings					
O&M Avoidance					
Capital Savings					
Capital Avoidance					

Total Ongoing Maintenance Expense by Year:

	2023	**2024**	**2025**	**2026**	**2027**
O&M					
Capital					

CES WHITE PAPERS

Business Unit / Division
Budget Year

1. Project / Program Summary

Type: ☒ Project ☐ Program	**Category: ☒ Capital ☐ O&M ☐ Regulatory Asset**
Work Plan Category: ☐ Regulatory Mandated ☐ Operationally Required ☒ Strategic	
Project/Program Title: Pole Mounted Energy Storage System Project	
Project/Program Manager: Ib Olsen	**Project/Program Number (Level 1): 27166905**
Status: ☒ Initiation ☐ Planning ☐ Execution ☐ On-going ☐ ☐ Other: _____	
Estimated Start Date: August 2023	**Estimated Date In Service: August 31, 2025**
A. Total Funding Request ($000) **Capital: 2,000** **O&M:** **Regulatory Asset:**	**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:** **Regulatory Asset:**	**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.*

Energy storage used as Grid Asset can provide a range of benefits. Energy storage equipment supports both resiliency and reliability of the substation and distribution grid, respectively, and simultaneously increasing hosting capacities for more renewable integration during peak hours.
As part of the Company overhead network equipment and its Energy Storage Equipment program the Company proposes to install and operate three pole mounted energy storage units. These units will provide localized grid support for both high need customers and for the distribution feeder. Installation on poles can prove to be very cost effective, as the installation will utilize existing utility right of way, and there will be no need for ground based civil construction.

Scope of work:
Purchase and install three 30kW pole mountable energy storage systems (ESS) on new poles. The poles and ESS will be installed on overhead feeders in Westchester with focus on the City of Yonkers. The final site will be determined in collaboration with Bronx Westchester Regional Engineering. Each ESS will be equipped with a small Remote Terminal Unit and Cellular Modem for remote monitoring and control through the Regional Control Center. Once installed, the project team will optimize the benefits from the ESS through manual and automatic deployment.

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.*

The proposed project is built on learnings from existing Company owned energy storage projects. Installing the pole mounted ESS in the overhead feeder network will bring energy storage close to the customer and provide benefits for highly targeted areas. It will be able to address localized voltage support and demand reduction.
The three systems will be fully integrated into the Company's distribution system infrastructure and eventually into the Company' future DERMS solution. The systems will be located in Potential Environmental Justice Areas, and will increase the reliability for customers in the area.
Pole mounted ESS may also defer costly upgrades to the distribution network by reducing the peak load and by provide localized VAR support.

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.

This project will contribute towards the New York State 6GW energy storage target by 2030

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
No action. The local distribution network may have to be upgraded sooner to service the higher load demand from the residential customer.

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
The local distribution network may have to be upgraded sooner to service the higher load demand from the residential customer.

Risk 2

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*

Increased reliability of the distribution network supported by the Ozone Park Energy Storage System

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.

$2,000,000

4. Basis for estimate
Explain the method used to create the estimate. Include all key assumptions.
Based on vendor estimates and input from regional engineering

5. Conclusion
Should the project be done at all? Does it make sense to spend additional dollars to continue the project? Justify.
The project should move forward as it will increase the reliability of the overhead network.

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).

An additional installation of a Pole Mounted ESS will be undertaken under the Grid Edge Renewable Lab Project. The learning will be coordinated across projects. The efficiencies for consolidated contracting will be explored with cost sharing as appropriate to ensure least cost procurement and installations between projects.

3. Funding Detail

Historical Spend

	Actual 2019	**Actual 2020**	**Actual 2021**	**Actual 2022**	**Forecast 2023**	**Historic Year** (O&M only)
Capital					666	
O&M						
Regulatory Asset						

Total Request ($000):

Total Request by Year:

	Request 2024	Request 2025	Request 2026	Request 2027	Request 2028
Capital	667	667			
O&M*					
Regulatory Asset					

Capital/Regulatory Asset Request by Elements of Expense:

EOE	2024	2025	2026	2027	2028
Labor	**107**	**118**			
M&S	**269**	**226**			
Contract Services	**125**	**145**			
Other	**150**	**151**			
Overheads	**16**	**27**			
Total	**667**	**667**			

Total Gross Cost Savings / Avoidance by Year:

	2024	2025	2026	2027	2028
O&M Savings					
O&M Avoidance					
Capital Savings					
Capital Avoidance					

Total Ongoing Maintenance Expense by Year:

	2024	2025	2026	2027	2028
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 ☐ Regulatory Asset**
Work Plan Category: ☐ Regulatory Mandated ☒ Operationally Required ☐ Strategic	
Project/Program Title: 2nd Feeder for Ozone Park Energy Storage System	
Project/Program Manager: Ib Olsen	**Project/Program Number (Level 1): 27144944**
Status: ☐ Initiation ☒ Planning ☐ Execution ☐ On-going ☐ ☐ Other: _____	
Estimated Start Date: August 2023	**Estimated Date In Service: December 31th, 2023**
A. Total Funding Request ($000) **Capital: 1,450** **O&M:** **Regulatory Asset:**	**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: 0** **Regulatory Asset:**	**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.*

The first Con Edison owned energy storage system was installed in the Brownsville substations No. 1 and 2 load area for the Brooklyn/Queens Demand Management Program utility sided non-traditional solutions. Construction of the 12 MWh battery began in 2017 with an in service date of 2018. This lithium-ion battery on Company property provides the Company valuable experience with operations, control, performance, and communications related to energy storage technologies. However, at the time it was decided to do the interconnection using only one feeder, feeder 9854. This feeder is connected to the Woodhaven and the 160th Street unit substations.
From the beginning the system was limited to charge at 1 MW instead of the max 2 MW, and it was prohibited from charging at more that 0.1MW in case of a contingency on the network. Those contingencies include the following situations:

1. Feeder 9854 is one-sided with the 4kV feeder breaker open at Woodhaven USS or 160 Ave #2 USS
2. The transformer breaker open at Woodhaven USS or 160 Ave #2 USS
3. 9B03 or 9B16 27kV feeders are out of service
4. Gap on the main run of feeder 9854

5. Feeder 9854 is picking up additional load from adjacent 4kV feeders via emergency switch moves
6. Five to eight % Voltage Reduction implemented at the Brownsville #2 Area Substation due to network contingency based on EOP-5022

End of June 2021, we were experiencing a heat wave and we were directed to discharge the Ozone Park Storage system every day from June 29 through July 1. However, on June 29 the system experienced a contingency, and we were not allowed to recharge the batteries after the June 29 discharge, which again resulted us in not being able to meet the discharge obligations on June 30 and July 1. A second feeder would had allowed the system to operate at its full capacity and meet its discharge obligations.
As a Secondary use case the 2nd feeder will allow the system to participate in the NYISO wholesale market participation at its full rated capacity where revenue earned will be returned to the rate payers.

Scope of work:
Extend feeder 9261 to the battery site using overhead spans and terminate with a recloser. The feeder will connect to the battery site via a new manhole. Construct a concrete pad and install a pad mounted automatic transfer switch (ATS) inside the battery side, and connect the ATS to the existing feeder 9854 and the new feeder 9261, and to the existing equipment via a new underground cable.

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.*

Adding the second feeder to Ozone Park Energy Storage system will bring us into compliance with the N-1 contingency within 4kV distribution networks.
It will enable us to charge at up to 2 MW, and it will enable us to charge even when there are contingencies on feeder 9854, and thereby enable us to respond to discharge requests during peak demand times.

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.

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
No action. The Ozone Park Energy Storage System will not be able to charge during feeder contingencies and therefore not be able to provide its intended reliability support as expected under the BQDM program.

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
The Ozone Park Energy Storage System will not be able to charge during feeder contingencies and therefore not be able to provide its intended reliability support as expected under the BQDM program.

Risk 2

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*

Increased reliability of the distribution network supported by the Ozone Park Energy Storage System

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.

$1,450,000

4. Basis for estimate

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

Estimate done by BQ reginal engineering

5. Conclusion

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

The project should move forward as it will bring the Ozone Park Energy Storage System into compliance with the company N-1 contingency standard.

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 ($000)

	Actual 2019	Actual 2020	Actual 2021	Actual 2022	Forecast 2023	Historic Year (O&M only)
Capital					1,450	
O&M						
Regulatory Asset						

Total Request ($000):

Total Request by Year:

	Request 2024	Request 2025	Request 2026	Request 2027	Request 2028
Capital					
O&M*					
Regulatory Asset					

Capital/Regulatory Asset Request by Elements of Expense:

EOE	2024	2025	2026	2027	2028
Labor					
M&S					
Contract Services					
Other					
Overheads					
Total					

Total Gross Cost Savings / Avoidance by Year:

	2024	2025	2026	2027	2028
O&M Savings					
O&M Avoidance					
Capital Savings					
Capital Avoidance					

Total Ongoing Maintenance Expense by Year:

	2024	2025	2026	2027	2028
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 ☒ Regulatory Asset**
Work Plan Category: ☐ Regulatory Mandated ☐ Operationally Required ☒ Strategic	
Project/Program Title: Brownsville Energy Storage System	
Project/Program Manager: Ib Olsen / Roy	**Project/Program Number (Level 1):**
Status: ☐ Initiation ☒ Planning ☐ Execution ☐ On-going ☐ ☐ Other: _____	
Estimated Start Date: 3/23	**Estimated Date In Service: 8/25**
A. Total Funding Request ($000) **Capital: $30,275** **O&M:** **Regulatory Asset: $600**	**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: $748** **Regulatory Asset:**	**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.*

Energy storage used as Grid Asset can provide a range of benefits. Energy storage equipment supports both resiliency and reliability of the substation and distribution grid, respectively, and simultaneously increasing hosting capacities for more renewable integration during peak hours.

The Brownsville Energy Storage System will be a Company-owned 5.8 MW / 23.2 MWh battery energy storage system installed on Company owned property adjacent to its Brownsville substation, serving a Disadvantaged Community

The primary use cases for this system are load relief, peak shaving, and reliability. The system will be designed for N-2 contingency configuration, and under normal operation the system will be connected to four 4kV feeders in parallel, and the system will be able to support all of those feeders.

In addition to real power discharge during peak demands and load relief, the system will provide an important utility function that addresses reliability. Using the system smart inverters, the system will provide dynamic reactive power compensation on the 4kV feeders. During peak loads this will help counter the following impacts of reactive power in the network:

I. Poor Network Efficiency: Losses in all power system elements from the power station generator to the utilization devices increase due to reactive power drawn by the loads, thereby reducing Network efficiency.
II. Poor Voltage Regulation: Due to the reactive power flow in the lines, the voltage drop in the lines increases due to which low voltage exists at the bus near the load and makes voltage regulation poor.
III. Low Power Factor: The operating power factor reduces due to reactive power flow in network.
IV. Need of Large Sized Conductor: The low power factor due to reactive power flow in line conductors necessitates large sized conductor to transmit same power when compared to the conductor operating at high power factor.
V. Increase in kVA Rating of The System Equipment: The reactive power in the lines directly affects kVA rating of the system equipment carrying the reactive power and hence affects the size and cost of the equipment directly.
VI. Reduction in the Handling Capacity of All System Elements: Reactive component of the current prevents the full utilization of the installed capacity of all system elements and hence reduces their power transfer capability.

The secondary use case will be NYISO market participation and earned revenue will be returned to the rate payers.

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.*

The Brownsville Energy Storage System (BESS) is a critical project that addresses key challenges in grid reliability and stability. By providing load relief, peak shaving, and dynamic reactive power compensation, the BESS enhances the grid's resilience, ensuring uninterrupted power supply to consumers during peak demand periods and critical network conditions. Its N-2 contingency configuration guarantees continuous operation even in the face of two simultaneous component failures, safeguarding against potential grid disruptions.

Through peak shaving and load relief functionalities, the BESS optimizes energy usage, flattens the load curve, and minimizes the need for additional power generation during peak hours. This results in reduced operational costs for energy providers and ultimately lowers electricity costs for ratepayers. Additionally, by addressing reactive power issues, the BESS helps decrease energy losses and the need for large-sized conductors, further contributing to cost savings and efficient grid infrastructure.

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 proposed project portfolio addresses several Company priorities including load management and resiliency.

Renewable energy generation, particularly from residential PV arrays are posing a challenge for local substations as the peak generation does not overlap with the peak consumption. Placing energy

storage at those substations, allows the Company to charge the systems during peak/over generation and then discharge during peak consumption.

As part of the push for net-zero emission, there is also a push for moving residential heating from natural gas to electricity. The electricity usage forecasts predict that this will result in the network changing from a summer peak to dual peaks.

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

Installation of customer sited energy storage systems or utility owned and operated systems on third-party owned land, which the Company would lease. However, because of the operational reliability that the proposed assets will provide to the transmission system and local substation, only the utility is positioned to execute this type of project. Another alternative would be customer sited solutions. However, based on two years of experience the Company has found that customer sited energy storage is less reliable when called on for critical operation.

Alternative 2 description and reason for rejection

Instead of investing solely in a single large-scale energy storage system like the Brownsville Energy Storage System, the company could consider implementing a distributed energy resources (DERs) integration approach. This alternative involves deploying smaller-scale energy storage systems, solar panels, wind turbines, and other renewable energy sources across the grid, distributed strategically to enhance grid resilience and reliability.

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 No Action would: Delay system benefits, learnings, and development of Company competencies from this technology. It would also impede on reaching the CLCPA goals for New York State and New York City

Risk 2

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*

Implementation of energy storage systems will provide the following benefits:

- Support the achievement of State energy storage goals through installation of storage capacity as well as through supporting the development of the state storage market by providing shovel ready project opportunities for developers.
- Develop key energy storage competencies in the Company around engineering and design, development, and operation of storage assets as network
- Leverage near-term benefits of storage while also building experience and understanding around how microgrid paired with storage can meet diverse future distribution system needs.

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 2019	**Actual 2020**	**Actual 2021**	**Actual 2022**	**Forecast 2023**	**Historic Year** (O&M only)
Capital					**$2,095**	
O&M						
Regulatory Asset					**$75**	

Total Request ($000):

Total Request by Year:

	Request 2024	**Request 2025**	**Request 2026**	**Request 2027**	**Request 2028**
Capital	**$6,958**	**$21,222**			
O&M*					
Regulatory Asset	**$225**	**$300**			

Capital/Regulatory Asset Request by Elements of Expense:

EOE	**2024**	**2025**	**2026**	**2027**	**2028**
Labor	$1,516	$4,131			
M&S	$3,096	$9,779			
Contract Services	$1,949	$5,684			
Other	$262	$1,044			
Overheads	$135	$ 584			
Total	$6,958	$21,222			

Total Gross Cost Savings / Avoidance by Year:

	2024	2025	2026	2027	2028
O&M Savings					
O&M Avoidance					
Capital Savings					
Capital Avoidance					

Total Ongoing Maintenance Expense by Year:

	2024	2025	2026	2027	2028
O&M			$243	$250	$255
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

SHARED SERVICES WHITE PAPERS

Utility Shared Services/Facilities & Field Services
2022

1. Project / Program Summary

Type: ☒ Project ☐ Program	**Category: ☒ Capital ☐ O&M**
Work Plan Category: ☐ Regulatory Mandated ☐ Operationally Required ☒ Strategic	
Project/Program Title: 30 Flatbush Avenue – Lease Exit Strategy	
Project/Program Manager: Alastair W. Lamb	**Project/Program Number (Level 1): 25551150**
Status: ☐ Initiation ☒ Planning ☐ Execution ☐ On-going ☐ ☐ Other: _____	
Estimated Start Date: 01/2024	**Estimated Date In Service: 08/2027**
A. Total Funding Request ($000) **Capital: 88,806** **O&M:**	**B.** **☐ 5-Year Gross Cost Savings ($000)** **☒ 5-Year Gross Cost Avoidance ($000)** **O&M: ~$42.8M** **Capital:**
C. 5-Year Ongoing Maintenance Expense ($000) **O&M:** **Capital:**	**D. Investment Payback Period: (Years/months) (If applicable)**

Work Description:

Background - In October 1970, Con Edison entered into an agreement with a developer, Nevin Associates, L.P. ("Landlord"), to lease approximately 211,000 square feet of office space and 21,000 square feet of ground floor retail space and associated below grade parking within a six story building to be constructed by the Landlord at 30 Flatbush Avenue, Brooklyn, NY. The original thirty-year lease term lease was extended three times and the current term ends in November 2027. The lease is on Triple Net ("NNN") terms and Con Edison is responsible for all repairs and maintenance required including any improvements required to remain in compliance with updated building code and local laws. There is one further option to renew the lease for an additional ten years through 2037 but there is no further option to purchase the building.

The 30 Flatbush Ave Lease Exit Strategy project comprises the work required to be able to exit the leased premises at 30 Flatbush Avenue, Brooklyn in advance of the lease expiration in November 2027. The project scope includes:

Relocation of Regional Electric Control Center – the Regional Electric Control Center (RECC) for Brooklyn/Queens is located on the third floor of 30 Flatbush Avenue. Electric Operations is currently evaluating alternative Company-owned locations to construct a new Control Center in support of the lease exit strategy.

Migration of Customer Operations Call Center Operations to Virtual Operating model – currently, approximately 500 Customer Operations employees report out of 30 Flatbush Avenue. During the pandemic, the group successfully implemented a 'home agent' operating model. Customer Operations

recently reached an agreement with Local 1-2 Leadership to continue the home agent model and plans to move permanently to a virtual operation in the future. This project includes the cost to relocate existing IT infrastructure from 30 Flatbush Avenue to other Company-owned location(s) to support a virtual call center operation.

Alterations & Upgrades to Company Owned Facilities to receive 30 Flatbush employees – approximately 950 employees currently report out of 30 Flatbush Avenue – approximately 500 working in Customer Operations and 450 working in Electric Operations. Following the permanent move to a virtual call center model, Customer Operations anticipates that approximately 450 employees will work remotely full-time. This project includes minor alterations and upgrades at other Company-owned properties to be able to receive approximately 50 Customer Operations employees who will likely continue to report to an office location. In addition, this project includes other alterations and upgrades to make-ready Company-owned properties to receive the balance of the 450 employees who currently report out of 30 Flatbush Avenue. The full scope of alterations and upgrades required to prepare receiving locations is currently being evaluated but is anticipated to include internal alterations and upgrades including architectural, lighting, fire protection, HVAC improvements and new furniture at Third Avenue and internal architectural alterations, restacking and new furniture at other potential receiving locations including 4 Irving Place, Rye HQ and Davis Avenue.

Justification Summary:

Less Office Space Required – currently, approximately 950 Con Edison employees report out of 30 Flatbush Avenue. However, the Company's office needs continue to evolve in response to the pandemic and technological advances that support remote working. As stated above, it is anticipated that approximately 500 customer service representatives or 56% of the current headcount will continue a 'home-agent' work arrangement, greatly reducing the need for office space. In addition, Con Edison continues to evaluate more flexible office-based practices and it is anticipated that the overall need for office space will reduce as employees adopt a hybrid work model.

Occupancy Cost forecast to Increase - The current annual cost to occupy 30 Flatbush Avenue including rent, taxes and facilities' related costs is approximately $10 million. However, if Con Edison exercises the option to extend the lease for a further ten years, it is anticipated that the office rent (currently below market) will be reset to 95% of fair market value. Assuming a step-increase in rent and anticipated increases in other facilities' related costs, the annual occupancy cost is forecast to increase to approximately $15 million in 2027 and the aggregate cost to extend our occupancy through 2037 is approximately $200 million.

Cost Risk associated with NNN Lease – as stated above, under the NNN lease Con Edison is responsible for all repairs and for work associated with code compliance. Due to the age and type of construction of the building, there is significant additional cost risk to Con Edison if our occupancy were extended through 2037. For example, Con Edison may be liable for building upgrades required to achieve emissions reductions and energy efficiency goals by 2030 to comply with Local Law 97.

Landlord's Development Plans - In 2019, the Landlord's interest was acquired by Robert L. Stark Enterprises, Inc., a Cleveland based real estate development company. Before the pandemic, Stark indicated to Con Edison their intention to further develop the site, including possibly renegotiating Con Edison's lease to allow the developer to add floors to the existing building in order to maximize the available development rights. Stark's development plans for the property remain uncertain at this time.

Relationship to Broader Company Plans and Initiatives (e.g. Long-Range Plans, CLCPA Initiatives, Risk Mitigation)

This project supports the Company's plans to migrate the customer operations Call Center to a virtual model and provides the opportunity to implement other improvements by relocating the Control Center to a Company-owned location. The project is also aligned with Con Edison's real estate strategy to optimize use of owned facilities, reduce our leased footprint and associated O&M. The project will include re-stacking and targeted alterations & improvements to optimize the use of Company-owned locations including 4 Irving Place, Rye Headquarters and Third Avenue.

2. Supplemental Information

Alternatives

Alternative 1a: Extend the 30 Flatbush Avenue Lease – as summarized above, Con Edison has the option to extend our occupancy through 2037. However, the anticipated O&M cost to continue occupation is forecast to increase significantly with additional cost risk due to the age of the building and NNN lease obligations. Further, extending the lease by ten years not only defers the make-ready costs to relocate operations and employees to alternative Company-owned locations assuming the Landlord pursues further development on the site but, also introduces potential liability for Local Law 97 compliance

Alternative 1b: Renegotiate Lease Terms – as for Alternative 1a but assuming the Landlord is willing to negotiate preferential terms for Con Edison to reduce its lease footprint and associated occupancy costs. Any such scenario would have to take into consideration the potential disruption to critical operations in the event that the Landlord proceeded with site development activities above and around Con Edison leased space.

Neither option is aligned with the Company's real estate strategy to reduce our leased footprint and associated O&M costs and are not recommended.

Risk of No Action

Risk 1: Failure to either execute the lease exit strategy or exercise the remaining 10 year option would result in default under the lease and expose Con Edison to substantial operating risks.

Non-Financial Benefits

Risk Mitigation - Migrating the Customer Operations Call Center to a virtual operating model is aligned with IT strategy to leverage the cloud and build-in redundancy and resilience to the call center operation.

Operational Synergies – relocating the Regional Electric Control Center to a Company-owned facility will benefit from existing IT and utilities infrastructure.

Summary of Financial Benefits and Costs (attach backup)

1.Cost Savings - the annual occupancy cost is forecast to increase to approximately $15 million in 2027 and the aggregate cost to extend our occupancy through 2037 is approximately $200 million. Relocating operations and employees to Company-owned locations will, at a minimum, save rent and real estate taxes (approximately $121 million) and potentially a proportion of other Facilities related occupancy costs.

2.Project Cost – the preliminary cost estimate for the anticipated scope of 'make ready' work to relocate the regional electric control center; move to a virtual customer assistance call center model including associated IT costs and complete alterations to receive employees at alternative Company-owned locations is summarized in the table below:

	Cost to Achieve ($000)					
	Engineering	Make-Ready Construction	IT Equipment & Infrastructure	Furniture	Total	Assumptions
Relocate Electric Control Center	3,450	25,875	9,200	incl	**38,525**	~15,000SF build-out at Rye HQ or 4IP
Migrate to Virtual Call Center Operation	1,150	-	11,500		**12,650**	Implement virtual home agent model allowing Customer Ops employees to work remotely
Absorb ~50 Customer Ops Employees	incl	2,875	incl	469	**3,344**	Minor alterations only at Rye HQ & Davis Ave; new workstations, data & electric
Absorb ~370 Other Employees	3,450	25,300	incl	5,023	**33,773**	Alterations at 3rd Ave. inc HVAC upgrades, new workstations, data & electric. Minor alterations to receive other employees at Rye HQ and 4IP.
					88,292	

3.Basis for estimates - the basis for the preliminary cost estimates are as follows:

Relocate Regional Electric Control Center - based on early concept plan layouts and approximately $/SF costs using adjusted historic costs for similar projects. Cost estimates include anticipated alterations and improvements to IT infrastructure at receiving location.

Migrate to Virtual Call Center – based on preliminary budget costs provided by IT.

Make-ready Work – based on early concept plan layouts and approximate $/SF costs using adjusted historic costs for similar scope of work required to receive employees at receiving locations.

Project Risks and Mitigation Plan

Risk 1 – Disruption to Critical Operations

Mitigation – complete further technical evaluation and develop schedule to design, construct, test and commission relocated Regional Electric Control Center and virtual Call Center operation prior to decommissioning existing facilities at 30 Flatbush Avenue.

Risk 2 – Schedule Delays

Mitigation – complete all make-ready work required to relocate operations and employees from 30 Flatbush Avenue by late 2026 to allow sufficient time (accounting for unforeseen delays) to safely relocate operations, move employees and complete lease restoration work during 2027.

Risk 3 – Unforeseen costs to execute lease exit strategy *Mitigation* – continue to define the scope and cost of all make-ready work; monitor and update preliminary cost estimates as required.
Technical Evaluation / Analysis An initial evaluation of the business case and possible operational impacts of exiting the lease at 30 Flatbush Avenue has been completed. A multi-disciplinary project team is continuing to evaluate and refine the technical aspects to the project.
Project Relationships (if applicable) The 30 Flatbush Avenue Lease Exit Strategy includes the relocation of the Brooklyn Queens Regional Electric Control Center; the migration of the customer operations Call Center to a virtual operating mode and various alterations and upgrades at various Company-owned locations in readiness to receive employees from 30 Flatbush Avenue prior to lease expiration.

3. Funding Detail

Historical Spend

	Actual 2017	Actual 2018	Actual 2019	Actual 2020	Historic Year (O&M only)	Forecast 2021
Capital						
O&M						

Total Request ($000):

Total Request by Year:

	Request 2022	Request 2023	Request 2024	Request 2025	Request 2026
Capital			5,547	36,022	47,237
O&M*					

Capital Request by Elements of Expense:

EOE	2022	2023	2024	2025	2026
Labor	-	-	3,883	2,882	3,779
M&S	-	-	-	1,801	2,362
Contract Services	-	-	277	21,613	28,342
Other	-	-	-	720	945
Overheads	-	-	1,387	9,006	11,809
Total	**-**	**-**	**5,547**	**36,022**	**47,237**

Total Gross Cost Savings / Avoidance by Year:

	2027	2028	2029	2030	2031
O&M Savings					

O&M Avoidance	~ $10.5M	~ $10.6M	~ $10.7M	~ $10.8M	~ $10.9M
Capital Savings					
Capital Avoidance					

Total Ongoing Maintenance Expense by Year:

	2022	**2023**	**2024**	**2025**	**2026**
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
[2023] – [2027] *(e.g., 2023 – 2027)*

1. Project / Program Summary

Type: ☒ Project ☐ Program	**Category: ☒ Capital ☐ O&M**	**☐ Regulatory Asset**
Work Plan Category: ☒ Regulatory Mandated ☐ Operationally Required ☐ Strategic		
Project/Program Title: Bill Impact System Replacement		
Project/Program Manager: Ricky Joe	**Project/Program Number (Level 1):**	
Status: ☐ Initiation ☐ Planning ☒ Execution ☐ On-going ☐ Other: _____		
Estimated Start Date: September 2022	**Estimated Date In Service: January 2024**	
A. Total Funding Request ($000) **Capital: $1,916** **O&M:**	**B. Expected Benefits** **☐ 5-Year Gross Cost Savings ($000)** **O&M:** **Capital:** **☐ 5-Year Gross Cost Avoidance ($000)** **O&M:** **Capital:**	
C. 5-Year Ongoing Maintenance Expense ($000) **O&M:** **Capital:**		

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.*

A tool must be developed to replace the existing mainframe process of calculating customer bill impacts. Bill impacts are required under regulations (e.g., 16 CRR-NY 720-2.2) and are used to respond to requests in rate cases. The project requires interfaces be built to accept usage data from the Customer Usage System (CUS), batch jobs will be used to utilize CC&B's rate check functionality to calculate customers' bills and the resulting billing data will need to be interfaced back to CUS for reporting purposes. The bill calculations will be done in a separate CC&B environment and will need a bill factor upload process to be developed so the rates used to calculate the bill impacts can be changed dynamically. Functional designs should be completed Q1 of 2023, design and build by Q2 of 2023, system integration testing by Q3 of 2023, user acceptance testing by Q4 of 2023 and deployment by Q1 of 2024.

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.

CECONY electric and gas services currently utilize the CSS mainframe system as a means to calculate various customer bill impacts, which are used in regulatory filings to the Public Service Commission. In rate cases, the requirement for bill impacts is provided pursuant to NY regulation (e.g., 16 CRR-NY 720-2.2). The bill impacts are achieved by CUS interfacing with the mainframe to provide files of monthly customer billing data and the mainframe is used to update the applicable rates. Pricing jobs are run in the mainframe which utilize the CUS billing data and input rate files, to calculate the impact the rates would have on the population of customers. The resulting data is then interfaced back to CUS, which generates reports that are used in regulatory filings (such as, rate cases and regulatory compliance filings) as well as in public communications (e.g., legal notices published in newspapers). As a result of the CORE project, CC&B will be replacing CSS and the mainframe will be retired, and a replacement tool for calculating the required bill impacts in CC&B must be developed. A process for uploading bill factors to the standalone CC&B bill impact environment will also be developed to replace the existing process of updating mainframe rate files.

Assessment if Project/Program's Impact on Greenhouse Gas Emissions and Disadvantaged Communities:
New section - guidance to be developed

Since the customer bill impacts can include customers that charge their electric vehicles or offer on-site charging for public or private electric vehicle charging, the bill impacts would include customers that affect greenhouse gas initiatives. Additionally, bill impacts would also apply to customers that qualify under the Company's low income discount programs and could affect customers in disadvantaged communities.

Relationship to Broader Company Plans and Initiatives (e.g., Long-Range Plans, CLCPA Initiatives, Risk Mitigation)
Explain how this project/program will help achieve goals in 5-year and long-range plans (10-year).
Explain how this project/program addresses risk mitigation activity.
List specific departmental and/or corporate risk being impacted.
Explain how this project/program addresses climate adaptation activity.
Explain how this project/program addresses climate mitigation, decarbonization, or CLPA investment activity.

As support and expertise for maintaining an inflexible outdated mainframe system became increasingly evident, the decision was made to move to Oracle's CC&B product. CC&B provides a modern, and more flexible approach to customer data and billing which allows the Company to be more dynamic in its ability to adapt to the everchanging energy market. In recent years, customer billing has become increasingly complex, and a static mainframe system is unable to support the growing needs of the business. This tool will allow for a CC&B environment which will be able to price out the billing impact of large volumes of customers under current and proposed rates. As a result, the Company will have greater flexibility, ability to respond to parties (including PSC Staff requests in a timely manner, and ease of determining the financial impact that price changes have on customers.

2. Supplemental Information

Alternatives

Briefly describe reasonable alternatives and reason for rejection (e.g., costs, timing, etc.). ***At least one is required.***
*****Consider: Phased implementation or multi-year postponement***

Option 1- Keep mainframe- Under this option there would need to be continued support for the mainframe system and it would need to be updated in parallel with CC&B as new regulatory requirements and rate structures are implemented. This is not a true option as the corporate decision has been made to retire the current mainframe system.

Option 2 – Calculate bill impacts manually - Without a new pricing engine, and without mainframe, bill impacts would need to be calculated via Excel. This is not a true option as there would be no means of integrating the customer usage data into Excel but moreover, this is not feasible due to the volume of billing calculations that would need to take place. Approximately 58.5 million bills are calculated as part of a rate case filing and that much data could not be processed via Excel. Also, this would require someone to manually design and build a pricing model which would mimic the already existing rate check functionality of CC&B. This would be extremely prone to human error and could result in incorrect data being provided to the PSC, interested parties and to the public.

Risk of No Action

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

If no action is taken and mainframe is retired, there will no longer be a means to calculate the bill impact analyses which are required regulatory filings. Due to the volume of bill calculations that must occur, calculating such data is not possible in Excel, and if the project is delayed, it may cause a delay in filing the next rate case, as well as the inability to submit complete annual compliance filings to the PSC.

Non-Financial Benefits

Examples:

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

With this tool, not only will we be able to ensure regulatory compliance, but it may also allow for more complex rate calculation comparisons. The current mainframe system only calculates bills under non-complex rate structures. By using the CC&B tool there will be greater flexibility in the types of rates that can be used to assess the effect of price changes on customers. For example, the mainframe is unable to calculate bills for complex rate structures such as electric standby rates or gas interruptible rates, as these customers are billed outside of the mainframe system (they are billed in CC&B and TCIS systems, respectively). However, with CC&B being the new billing engine for these types of accounts, the functionality will exist to be able to provide bill impacts using these rate structures. Under the mainframe process, bill impacts could be subject to delays depending on other jobs in the queue. With more streamlined processes under CC&B, the Company will be able to respond to bill impact requests more quickly than under the mainframe process.

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.

N/A

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.

N/A

3. Basis for estimate

Explain the method used to create the estimate. Include all key assumptions. Include assumptions for the portion of costs that could be associated with climate change mitigation and/or adaptation, if applicable.

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 Lack of expertise on existing mainframe pricing code Mitigation plan: Meet regularly with IT (Cognizant) to get background information of the pricing calculations the mainframe processes, as well as examining the mainframe source coding.

Risk 2 Incomplete specifications Mitigation plan: Meet regularly with Rate Engineering to discuss source files, as well as gather requirements on the functionality that the new CC&B bill impact tool will need to provide.

Risk 3 Large variances between old and new processes Mitigation plan: Coordinate periodic status update meetings among IT, Rate Engineering and CORE team to minimize the level of variances

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.

N/A

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).

This project allows for greater flexibility in determining the effect various rates have on customers. This promotes the Company's initiatives of providing customers with more complex rate options.

3. Funding Detail

Historical Spend by Year ($000):

	Actual 2018	Actual 2019	Actual 2020	Actual 2021	Historic Year (O&M only)	Accrued 2022
Capital						627
Regulatory Asset						

Total Request ($000):

Total Request by Year:

	Request 2023	Request 2024	Request 2025	Request 2026	Request 2027
Capital	1,289				
Regulatory Asset					

Total Gross Cost Savings / Avoidance by Year:

	2023	2024	2025	2026	2027

O&M Savings					
O&M Avoidance					
Capital Savings					
Capital Avoidance					

Total Ongoing Maintenance Expense by Year:

	2023	**2024**	**2025**	**2026**	**2027**
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
2023 – 2024

1. Project / Program Summary

Project/Program Title: Electric WMS – EBS Integration Redesign		
Type: ☒ Project ☐ Program	**Category: ☒ Capital ☐ O&M**	**☐ Regulatory Asset**
Work Plan Category: ☐ Regulatory Mandated ☒ Operationally Required ☐ Strategic		
Investment Categories: ☒ Core ☐ Clean ☐ Climate Resilience ☐ Resilience Other		
Project/Program Manager: Lisa Gotay	**Project/Program Number (Level 1):**	
Status: ☒ Initiation ☐ Planning ☐ Execution ☐ On-going ☐ Other: _____		
Estimated Start Date: 11/1/2023	**Estimated Date In Service: 3/31/2024**	
A. Total Funding Request ($000) **Capital: 750** **O&M:**	**B. Expected Benefits** **☐ 5-Year Gross Cost Savings ($000)** **O&M:** **Capital:** **☐ 5-Year Gross Cost Avoidance ($000)** **O&M:** **Capital:**	
C. 5-Year Ongoing Maintenance Expense ($000) **O&M: N/A** **Capital:**		

Work Description:
The scope of work includes major system enhancements and redesign of EBS (POET) integrations such that Electric WMS remains functional when Oracle EBS has planned or unplanned outages. Key project activities include:

Project scope
- Requirements gathering, analysis on current integrations (as-is and to-be state) and impact analysis
- Deliver updated functional and technical design documents
- Implementing code changes, unit testing, UAT and deployment.
- Organizational change management.

System changes:
- Redesign and/or changes to interfaces WM_627, WM_628, and WM_XXX
- Develop new extensions to enhance/process project setup and As-built WR accounting setup interfaces.

Process changes (preliminary):
- Work progression and Labor reporting during EBS outages
- Derivation of Virtual Accounts
- Dependance on Work Requests being related to BCAs to derive the overall cost of the project
- Updating of Network and WR Owner as part of the process

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.

In the current design, Electric Operations are severely impacted by Oracle EBS outages due to dependency of real-time POET generation/validation. During outages, work cannot be dispatched to the field and as a result the business is forced to work in business continuity mode (paper). The project intends to mimic integration design from Gas WMS

and decouple WMS from the EBS system. This is critical for ensuring that emergency work related to outages coming from STAR for Electric Operations can still be performed during ORACLE upgrades.

Benefits of the Solution

- During EBS outages, O&M Work Requests are not impacted.
- During EBS outages, non-O&M Work Requests without Project and Task Setup cannot be scheduled.
  - This will be visible to users as Task 5800 will be in a 'Pending' status.
  - However, if needed the Pre-Requisites can be adjusted and the work could continue with the understanding that there could be issues with the Time Reporting
- During EBS outages, non-O&M Work Requests can still progress to design finalization.
- During EBS outages, all Work Requests can still be entered in Electric ARM.

Assessment if Project/Program's Impact on Greenhouse Gas Emissions and Disadvantaged Communities:
New section - guidance to be developed

Relationship to Broader Company Plans and Initiatives (e.g., Long-Range Plans, CLCPA Initiatives, Risk Mitigation)
Explain how this project/program will help achieve goals in 5-year and long-range plans (10-year).
Explain how this project/program addresses risk mitigation activity.
List specific departmental and/or corporate risk being impacted.
Explain how this project/program addresses climate adaptation activity.
Explain how this project/program addresses climate mitigation, decarbonization, or CLPA investment activity.

2. Supplemental Information

Alternatives

Briefly describe reasonable alternatives and reason for rejection (e.g., costs, timing, etc.). ***At least one is required.***
*****Consider: Phased implementation or multi-year postponement***

Risk of No Action

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

Non-Financial Benefits

Examples:

- *Increased safety, reliability, resilience (including climate adaptation), efficiency, or customer satisfaction*
- *Improved workflows and communication among departments*
- *Stronger relationships with community or with regulators*
- *Ensuring 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. Basis for estimate

Explain the method used to create the estimate. Include all key assumptions. Include assumptions for the portion of costs that could be associated with climate change mitigation and/or adaptation, if applicable.

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 by Year ($000):

	Actual 2018	**Actual 2019**	**Actual 2020**	**Actual 2021**	**Historic Year** (O&M only)	**Forecast 2022**
Capital						
Regulatory Asset						

Total Request ($000):

Total Request by Year:

	Request 2023	**Request 2024**	**Request 2025**	**Request 2026**	**Request 2027**
Capital	**500**	**250**			
Regulatory Asset					

Total Gross Cost Savings / Avoidance by Year:

	2023	**2024**	**2025**	**2026**	**2027**
O&M Savings					
O&M Avoidance					
Capital Savings					
Capital Avoidance					

Total Ongoing Maintenance Expense by Year:

	2023	**2024**	**2025**	**2026**	**2027**
O&M	0	0	0	0	0
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: Electrification	
Project/Program Manager: Calvanico, Alphonse	**Project/Program Number (Level 1):**
Status: ☐ Planning ☐ Design ☐ Engineering ☐ Construction ☒ Ongoing ☐ Other: _____	
Estimated Start Date: 05/01/2023	**Estimated Date In Service: 12/31/2023**
A. Total Funding Request ($000) **Capital: $1,150** **O&M:** **Retirement:**	**B.** **☐ 5-Year Gross Cost Savings (0)** **☐ 5-Year Gross Cost Avoidance ($000)** **O&M:** **Capital:**
C. 5-Year Ongoing Maintenance Expense ($000) **O&M: $** **Capital:**	**D. Investment Payback Period:** **(3Years/6months)**

Work Description:

This Electrification initiative outlined in this roadmap applies emerging technologies to enhance the customer experience, encourage self-service, increase Energy Services Representative productivity, reduce costly errors, and shorten case lifecycles. These benefits would be achieved by significantly adding functionality to our Customer Project Management System (CPMS), Salesforce, and Project Center. In addition, critical information would be added to Energy Services Department (ESD) cases to help ESD reps streamline case progression and clearly identify cases associated with electrification initiatives.

This goal will add specific fields and functionality to our internal and external facing applications. New functionality and fields would be built and implemented to enhance the customer experience and streamline the process for electrification cases. Once these new features and fields are implemented, Energy Services can optimize business processes. The technology group has created a road map to phase-in these initiatives over the next 8 months beginning in May of 2023, with various releases throughout that time.

- Create a new customer prompt in Salesforce/Project Center that requests a construction start date and attachment for a customer schedule, site picture, receipt scans, or other fields
    - Create a new document request for "proof of purchase" that customer must upload a receipt or something else to confirm that they are moving forward
- Add a field for customer-provided construction completion date and document request for customer construction schedules
    - We already have a pre req in CPMS for Customer Construction Schedule, so we could look to make that a mandatory pre req in all PEV case types

- Develop logic that rejects impossible construction dates (e.g., construction complete date precedes construction start date)
    - When customer inputs above information, CPMS logic would pass or fail if date is achievable based on service determination, ie if 460 take 24 months and they give construction completion date of 20 months
- Add the ability to edit load tabs in Project Center – Adding this feature will enhance the customer's experience. There is currently no option to edit the load information on a customer's case once it is filed. In the event the customer needs to update their loads the case must be canceled and resubmitted causing unnecessary delays and a poor customer experience.
- Add ability to pause case in Project Center - Adding this feature will eliminate cases being canceled due to no activity/response from the customer which results in unnecessary delays and a poor customer experience.

Justification Summary:
The goal of this initiative is to significantly increase the current functionality of our systems, decrease the overall case lifecycle, reduce case errors, increase customer satisfaction, and reduce ESD representative time required to progress the majority of ESD cases. These benefits would be derived from adding the above-mentioned fields and functionality.

Examples of tangible business benefits include:

Reduction in cloned cases: Currently when load information needs to be updated the ESD Rep must cancel the case and have the customer resubmit through Project Center. These cases must then start from the beginning which is a drain on resources.

Proactively Progress Cases: By adding in functionality of construction start dates and project schedules ESD will be better equipt to ensure the customer case is moving along in a timely manner and we are meeting their timelines.

Enhance the customer experience: By allowing customers to pause their cases this will eliminate unnecessary case closures. Currently CPMS automatically scans CPMS for inactivity. The customer receives two notices asking them to act. If they miss these notices their case will be closed.

By adding in the functionality for the customer to opt out of this feature and pause their case the case will not be canceled and will not need to start over.

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

This project is aligned with the Corporate goal of enhancing the customer's experience by adding significant functionality to our systems. It is also aligned with the BCO initiative to reduce cost while maintaining a +1 Customer Experience.

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 goal of the program would be to leverage technology to streamline the end-to-end resolving electric and gas new business requests by increasing system functionality to make corrective actions proactively and avoid pain points. The same goal can be achieved by hiring additional resources to manually do this work. The team would manually clone cases, check construction dates and communicate with customers. The case owners would then monitor their case submittals for unrealistic construction dates and inaccurate load information.

With approximately 60,000 cases filed annually, this alternative would be costly, difficult to manage, and would produce lower quality output.

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

There is a significant reputational and regulatory risk if the company is unable to reduce new business interconnection times for electrification projects. Various stackholders have indicated the process is too lengthy. In addition, these enhancements will impact the company's ability to earn on the Transportation Interconnection Timeline EAM that will measure reduced interconnection timelines.

Risk 2

Declining customer satisfaction due to increasing expectations as customers get used to new customer services with other companies, especially as regards increased case transparency, increased customer self service functions, quicker problem resolution, and decreased case lifecycle.

Risk 3

Increased cost to clone cases, re triage and being processed over again. Increasing Representative (ESR) and Clerical Staff headcount to maintain existing levels of service.

Non-Financial Benefits

Implementation of the program described above is expected to provide substantial increases in customer satisfaction by adding self-service functionality and decreasing case lifecycle time.

Customers will have more transparency and self-service into case status, and control over case progression (Customer Empowerment).

All technologies will be designed within the guidelines of IT and the DCX initiative. This initiative would leverage and reuse any existing technologies already implemented in Con Edison.

The design will allow scalability. Any newly implemented technology would scale from a department to an enterprise solution.

Summary of Financial Benefits and Costs (attach backup)

ESD can calculate a reasonable estimate of the financial benefits of these initiatives. For a more detailed description of these benefits, please see below.

Annual benefits once implemented:

- Revised Service Determinations due to incomplete/inaccurate/late load data:$450,000
- Cases needed to be cloned due to incorrect load information $225,000

Total Estimated Annual Financial Benefits each year -

Benefits: Cost avoidance

Year 1: $675,000

This initiative would result in a yearly financial benefit of $675,000 dollars with an ROI of 1.5 years.

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 current platform does not have best-in-class self-service features.

Mitigation plan:
Implement items outlined in the abovementioned roadmap to increase self-service features.

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 2019**	**Actual 2020**	**Historic Year** (O&M only)	**Forecast 2021**
Capital						
O&M						
Retirement						

Total Request ($000):

Total Request by Year:

	Request 2023	**Request 2024**	**Request 2025**	**Request 2026**	**Request 2027**
Capital	**$1,150**				
O&M*					
Retirement					

Capital Request by Elements of Expense:

EOE	**2023**	**2024**	**2025**	**2026**	**2027**
Labor	**490**				
M&S	**10**				
Contract Services	**650**				
Other					
Subtotal					
Contingency**					
Total					

Total Gross Cost Savings / Avoidance by Year:

	2024	**2025**	**2026**	**2027**	**2028**
O&M Savings					
O&M Avoidance	**$675,000**				
Capital Savings					
Capital Avoidance					

Total Ongoing Maintenance Expense by Year:

	2023	**2024**	**2025**	**2026**	**2027**
O&M					
Capital					

*If whitepaper is supporting a capital project/program this refers to implementation O&M
**Please refer to the Corporate Contingency Guidelines

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.

Total Contingency: Total contingency expense according to the Corporate Contingency Guidelines

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)

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: IT Architecture Standards/Tech Modernization- Service Layer Upgrade	
Project/Program Manager: Eric Mastroianni	**Project/Program Number (Level 1):**
Status: ☐ Initiation ☐ Planning ☒ Execution ☐ On-going ☐ ☐ Other: _____	
Estimated Start Date: January 2020	**Estimated Date In Service: Ongoing**
A. Total Funding Request ($000) **Capital: $28,246** **O&M: $0**	**B.** **☐ 5-Year Gross Cost Savings ($000)** **☐ 5-Year Gross Cost Avoidance ($000)**
C. 5-Year Ongoing Maintenance Expense ($000) **O&M: $ 0**	**D. Investment Payback Period: (Years/months) (If applicable)**

Work Description:

In 2017, a centralized service layer platform, which consists of numerous Application Programming Interfaces (APIs) that support our various public facing platforms (Web, Mobile, Text, Voice) was implemented. These APIs currently integrate with back-end systems using direct query integration which was the common company standard at the time.

In 2021, while finalizing designs for the Oracle CC&B implementation it was evident that the integrations required a full re-write to align with current Enterprise Architecture standards.

The costs outlined in this white paper outline the development work and user interface (UI) integration required to align these integrations with the Enterprise Architecture standards. Additional UI work is also incorporated, which was identified as beyond the initial planned scope required to integrate with Oracle CCB.

Architecture & Design / Back-end Integrations

- **Develop New APIs (CE/ORU)**
  - Includes new business logic
  - 11-digit account number impacts
- **Integrate New APIs to new EIE Layer**
  - Switches back-end integration from API →Direct Query **to** API → API
- **Implement New Queuing and Caching Models**
- **Implement New Security Model**
- **.NET Framework Upgrades**

- .NET Core to .NET 6
- **Data Conversion**
  - Migration of Account Numbers / MAIDS (Customer communications across channels and Third Party)
- **New Interfaces built in CC&B with DCX to support Notifications, Preferences, Leave On For Landlord (LOFLL)**
  - Overdue payment alert(broken PA) Push Notification
  - Overdue payment alert(arrears) Push Notifications
  - Overdue payment alert(PA installment overdue) Push Notification
  - Payment Processed Push Notification
  - Payment Due Push Notification
  - Bill Ready Push Notifications
  - Get Notification Preferences
  - Set Notification Preferences
  - Get Enrolled Children by Parent Maid
  - Get Enrolled Parents by OktaUserID
  - Get Eligible Parents by OktaUserID
  - Update Profile and Account Linkage
  - Create Profile with Linked Account
  - GET bopaUnits by OktaUserID
- **New Interfaces built in CC&B with Message Broadcast to support Notifications, Preferences, Leave On For LandLord (LOFLL)**
  - Report Outage confirmation
  - Statement File to MB
  - Receive stop service notification
  - Receive transfer service notification
  - Received start service request
  - Received Payment
  - Overdue payment alert(arrears) notification
  - Overdue payment alert(PA installment overdue) notification
  - Overdue payment alert(broken PA) notification
  - Agreement reinstatement alert notification
  - LOFLL_Enrollment – Landlord enrolled an account in LOFLL program
  - LOFLL_DeEnrollment – Landlord de-enrolled an account in LOFLL program
  - LOFLL_TurnOn – An account is turned on under the landlord name through the LOFLL program
  - LOFLL_TurnOff -- Tenant unit turned off. Notify landlord that unit will be transferred to landlord after 7 days
- **Other**
  - Develop new Transaction Failure Reports
  - Re-Integrate DCX Assist

User Experience Modifications

- **Account Number Modifications 15 to 11**
  - 10-digit account number impacts (DCX service layer and customer presentment (Sitecore, IPP/SHR, Notifications, IOS, Android, Voice, Share My Data and related APIs)
- **Summary Billing**

- **Share My Data**
- **Preference Center**
- **LOFL**
- **Real-time Payments**
- **Person / OKTA Profile Relationship**
- **3rd Party Integrations**
    - Oracle and Uplight
    - Broadridge
    - Bill Matrix / Fiserv

Regulatory / Additional:

- **Regulatory Enhancements**
    - COVID
    - Rates
    - Storm Card
- **Improved Customer Experience**
    - LSE
    - Outage
    - 3rd Party Data Sharing to Support CLCPA

Justification Summary:

The driver for this work is compliance with our Enterprise Architecture Standards, which have been updated continuously over the last few years. These IT standards require moving from direct query integration to centralized enterprise integration using API's; similar to work previously completed for our communication platforms. Meeting these standards benefits the Company and customers and aligns with our large software vendor's standards (Microsoft, Oracle, Amazon, etc.)

In re-writing the back-end integration, there are updates required to the front-end customer user interfaces. These updates include replacing obsolete technology and retrofitting evolving business needs that satisfy regulatory changes and deliver an improved customer experience.

Additionally, ancillary UI work is needed that if not done at the time of the upgrade would result in loss of function for customers or degraded experience. This work outlined in the work description is positioned to be done in parallel with this upgrade work.

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

These investments are strategic efforts and will enable improvement to the customer experience, increased customer satisfaction scores, and deflected calls for transactions. The work here supports the obsolescence risks of various IT systems, therefore supporting the Company's strategic customer goals in the long-range plan.

2. Supplemental Information

Alternatives

The alternative is to delay or allow for our customer facting platforms to become out of support or misaligned with evolving Enterprise Architecture standards that protect IT infrastructure from obsolescence. This would put Company at risk of obsolete technology leading to loss of ability to interact with customers and satisfy regulatory requirements.

Risk of No Action

There are several key risks associated with no action:

- Technology obsolescence, resulting in customer impact with less resiliency of customer facing platforms and performance degradation
- Increased costs of future work and requiring rework and throw away work if not done at the time of this integration for CC&B

Non-Financial Benefits

The work will result in several non-financial benefits, including but not limited to the following:

- Mitigate risk of technology obsolescence
- Bring in functional capabilities avoid obsolescence
- Further enable a positive customer experience

Summary of Financial Benefits and Costs (attach backup)

None determined at this time.

Project Risks and Mitigation Plan

Information Technology and Business Resourcing
The project team has procured multiple contracts, including a staff augmentation partner to allow for flexible teams that can scale to address capacity needs to mitigate this risk.

Technical Evaluation / Analysis

A comprehensive technical evaluation was completed is analysis was utilized as the basis for scope, staffing, and cost estimates for the program.

This evaluation also included a review of future customer needs and trends, and the strategies and technology to meet these needs.

Project Relationships (if applicable)

This program is related to the Automated Metering Infrastructure (AMI) program and numerous clean energy programs (e.g., REV Demonstration Projects, AMI Innovative Pricing Pilots, Energy Efficiency programs, Electric Vehicle programs, etc.). Additionally, the DCX program will share several dependencies with capital projects proposed in this filing including Virtual Assistants, Journey Mapping, Customer Analytics, Outage Communications, Customer Data Sharing, Customer Recommendation Tools, the Customer Relationship Management system, and the New CSS Implementation program.

The CORE project progress and timeline will provide direction of when the efforts here will be moved to service.

3. Funding Detail

Historical Spend ($000)

	Actual 2019	Actual 2020	Actual 2021	Actual 2022	Historic Year (O&M only)	Forecast 2023
Capital			$5,063	$13,200		$9,983
O&M						

Total Request ($000):

Total Request by Year ($000):

	Request 2020	Request 2021	Request 2022	Request 2023	Request 2024
Capital		$5,063	$13,200	$9,983	
O&M*					

Capital Request by Elements of Expense ($000):

EOE	2020	2021	2022	2023	2024
Labor		$243	$517	$563	
M&S					
Contract Services		$4,723	$12,476	$9,195	
Other					
Overheads		$97	$207	$225	
Total					

Total Gross Cost Savings / Avoidance by Year ($000):

	2022	2023	2024	2025	2026
O&M Savings					
O&M Avoidance					
Capital Savings					

Capital Avoidance					

Total Ongoing Maintenance Expense by Year ($000):

	2022	**2023**	**2024**	**2025**	**2026**
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

CECONY / Information Technology
2024-2028

1. Project / Program Summary

Project/Program Title: New Customer Service System Enhancements

Type:	☒ **Project**	☐ **Program**	**Category:**	☒ **Capital**	☐ **O&M**	☐ **Regulatory Asset**	
Work Plan Category:	☐ **Regulatory Mandated**	☐ **Operationally Required**	☒ **Strategic**				
Investment Categories:	☒ **Core**	☐ **Clean**	☐ **Climate Resilience**	☐ **Resilience Other**			

Project/Program Manager: David Revie

Project/Program Number(Level 1):

Status: ☐ **Initiation** ☐ **Planning** ☐ **Execution** ☐ **On-going** ☐ **Other :**

Estimated Start Date: 1/1/2024

Estimated Date In Service: 12/31/2024

A. Total Funding Request ($000)

Capital: 31,900

O&M:

B.

☐ **2024-2028 Cost Savings ($000)**

O&M:

Capital:

☐ **2024-2028 Gross Cost Avoidance ($000)**

O&M:

Capital:

C. 2024-2028 Ongoing Maintenance Expense ($000)

Capital:

O&M:

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.*

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.*

Assessment if Project/Program's Impact on Greenhouse Gas Emissions and Disadvantaged Communities:

New section - guidance to be developed

Relationship to Broader Company Plans and Initiatives (e.g. Long-Range Plans, CLCPA Initiatives, Risk Mitigation

Explain how this project/program will help achieve goals in 5-year and long-range plans (10-year). Explain how this project/program addresses risk mitigation activity. List specific departmental and/or corporate risk being impacted. Explain how this project/program addresses climate adaptation activity. Explain how this project/program addresses climate mitigation, decarbonization, or CLCPA investment activity.

Risk 1 Name: Corporate ConEd.Strategic.NY Regulation	Risk 1 Description: The new billing system will allow for the implementation of new rates and regulatory changes more efficiently and accurately than in the past. The new billing system also streamlines the automation of community solar (CDG).

2. Supplemental Information

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

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

Non-financial Benefits:
Examples:
- *Increased safety, reliability, resilience (including climate adaptation), efficiency, or customer satisfaction*
- *Improved workflows and communication among departments*
- *Stronger relationships with community or with regulators*
- *Ensuring 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. Basis for estimate
Explain the method used to create the estimate. Include all key assumptions. Include assumptions for the portion of costs that could be associated with climate change mitigation and/or adaptation, if applicable.

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	**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 Details

Historical Spend by Year ($000):

	Actuals 2019	Actuals 2020	Actuals 2021	Actuals 2022	Historic Year (O&M only)	Forecast 2023
Capital						$2,000
Regulatory Asset						

Total Request ($000):

Total Request by Year ($000):

	Request 2024	Request 2025	Request 2026	Request 2027	Request 2028
Capital	7,800.0	7,800.0	7,800.0	6,500.0	0.0
Regulatory Asset					

Total Gross Cost Savings / Avoidance by Year:

	Request 2024	Request 2025	Request 2026	Request 2027	Request 2028
O&M Savings					
O&M Avoidance					
Capital Savings					
Capital Avoidance					

Total Ongoing Maintenance Expense by Year:

	Request 2024	Request 2025	Request 2026	Request 2027	Request 2028
O&M					
Capital					

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

Information Technology
2021

1. Project / Program Summary

Type: ☒ **Project** ☐ **Program**	**Category:** ☒ **Capital** ☐ **O&M**
Work Plan Category: ☐ **Regulatory Mandated** ☐ **Operationally Required** ☒ **Strategic**	
Project/Program Title: Technology Modernization Program – Mainframe components	
Project/Program Manager: Rich Stachnik	**Project/Program Number(Level 1):** **Various**
Status: ☐ **Initiation** ☐ **Planning** ☒ **Execution** ☐ **On-going** ☐ **Other :**	
Estimated Start Date: 6/1/2021	**Estimated Date In Service:** 5/2/2023
A. Total Funding Request ($000) **Capital:** $ 6,026 **O&M:**	**B.** ☐ **5-Year (starting next year) Cost Savings ($000)** ☐ **5-Year (starting next year) Gross Cost Avoidance ($000)** **O&M:** **Capital:**
C. 5-Year (starting next year) Ongoing Maintenance Expense ($000) **Capital:** **O&M:**	**D. Investment Payback Period: (Years/Months) (If applicable)**

Work Description:

Con Edison and O&R IT department manages a portfolio of approximately 500 applications in support of our Electric, Gas, Steam and Shared Services organizations. Today, these applications reside on the mainframe or on distributed platforms either hosted internally or in the cloud. IT has developed a strategic initiative to migrate business systems away from the mainframe and associated software including MQ Series, by replacing, consolidating, and retiring applications in this portfolio. MQ Series is IBM middleware that has become difficult to support. Internal resources are scarce and not sustainable and vendors do not have or expect to have expertise.

We are planning four initiatives to progress this goal of modernizing our technical assets. All of these efforts are initiatives that will retire mainframe based solutions and result in assets that meet important business functions on more modern platforms.

- CECONY IVR Modernization

CECONY owns and operates an IVR system which allows customers to self-serve by phone for several transactions including electric outage reporting, payments, turnoff of service, and others. These systems were originally implemented using carrier trunks (legacy phone circuits) and include the use of legacy technology such as the IBM mainframe and MQSeries to integrate with the Company's customer systems.

To modernize this platform the IVR will undergo the following work:

- Design, build, and testing of new integrations to the company's customer information system, which will utilize industry standard APIs (Application Programing Interface) to interface between these systems. This will allow the IVR to eliminate its dependency on the mainframe and legacy technologies of MQSeries.

  New Interfaces will be developed to support the following capabilities:

  - Retrieval of customer account information
  - Automated transfer of call and account info to Customer Service Rep when applicable
  - Retrieval of account number from caller's telephony information
  - Customer Payment Agreement
  - Customer Cell Phone Update
  - Customer fax number update
  - Customer Foreign Language Flag update
  - Customer Telephone Number update
  - Creation of Customer contact transaction on customer system
  - Creation of note on customer account
  - Creation of Reconnect Turn-on to customer system
  - Creation of electric trouble ticket to customer system
  - Payment transaction to customer system
  - Retrieval of customer bank account information from previous payment
  - Customer enrollment in Auto Pay to customer system

- Bill Print Modernization

Con Edison and O&R utilize software called Exstream to produce customer bills and letter correspondence. This software is currently running on the mainframe and with the CIS system moving off the mainframe, we have an opportunity to move this software to a modern platform and eliminate the mainframe dependency for this mission critical functionality.

To replatform this software the following investments are needed:

- Purchase OpenText Exstream licenses for linux platform
- Install and configure the software across 4 servers for test and production
- Purchase 2 years of support and maintenance for the duration of the design and build phase of this work

- Address Cleansing Modernization

CECONY and O&R interact with customers for monthly billing, letters, and post cards through mail. To ensure the highest level of accuracy when sending this customer correspondence and to be eligible for postage discounts, the company utilizes address validation software to cleanse address data. The software currently being used is a mainframe based solution which doesn't easily support integrations from distributed applications. To eliminate the dependency of this functionality on legacy IBM mainframe technology, we are looking to invest in modernized software which will run in current distributed platforms for this business need. This investment not only allows us to meet our current business needs but allows for expansion of use by other systems and use cases.

To modernize this solution the following work is needed:

- Purchase install and configure Spectrum software for real-time and batch address validation/cleansing
- Purchase install and configure Verimove software to obtain address changes resulting from customer moves

- Cuflink Retirement

CufLink is a mission critical application supporting STAR, PVL and Rate Engineering applications. The system combines information from mapping systems and the customer information system in order to maintain a database with linkage between customers and service points. The CufLink system currently relies on several legacy technologies including IBM mainframe programs, Oracle database version 12c, and red hat linux version 6. To allow for the retirement of this application and its obsolete technology, we will build equivalent functionality into the new Oracle Customer Care and Billing system.

To retire Cuflink the work below is needed:

- 9 interfaces/extracts need to be designed and built from CC&B to eGIS and Gas Ops to enable the retirement of Cuflink

Justification Summary:

The objective of this project is to enforce enterprise application standards through consolidation and reduction of obsolete technology. Duplicative platforms and obsolete technology results in increased costs for licenses, maintenance and support. In addition, obsolete technology leads to cyber risk and falling behind from a functionality perspective leads to inefficient use of software and ultimately leads to increased support costs. These upgrades are required as systems vendors keep phasing out support for the existing operating systems, databases, and applications and release new versions to provide enhanced security and increased functionality.

The main drivers of this effort are:

- Increase operational efficiencies by keeping applications functionally current
- Consolidate and rationalize various applications
- Reduce technology obsolescence to mitigate risks
- Avoid losing vendor/software support

Relationship to Broader Company Plans and Initiatives (e.g. Long-Range Plans, CLCPA Initiatives, Risk Mitigation)

Our long-range plan is to have a rationalized, and technically current set of steady state applications to support the enterprise. This strategy includes modernization, retirements and consolidation of the application portfolio as well as maintaining technical currency to avoid cyber threat and functionality decline.

Risk 1 Name:	Risk 1 Description:

2. Supplemental Information

Alternatives:

None.
Technology currency is the ongoing process of understanding how current an item of hardware or software is, compared to the latest available version. Managing technology currency is a vital part of operational resilience as organizations attempt to balance the cost associated with maintaining technology currency versus the risk posed. Servers, databases, desktop operating systems, as well as application upgrades and consolidation are necessary to comply with technology standards, cyber compliance, vendor compliance and PSC mandated requests.

Risk of No Action:

Risk 1

Cyber Risk: Not keeping technologies up to current versions lead to cyber security vulnerabilities. Key applications remain on an unsupported technology requiring separate support resources, technologies, and infrastructure and leave the systems vulnerable for cyberattacks. In addition, security updates are not provided and vendor support ends after a certain point, increasing the cyber risk on existing code if not migrated to a new standard.

Risk 2
Increased Cost: Higher incremental support costs from hardware and software vendors. Older version maintenance eventually leads to incremental support costs.

Risk 3

Reduced availability of critical business applications. Software code must be upgraded or rewritten to meet business SLA's.

Non-financial Benefits:

Upgrading to the new standards will keep the applications and technologies current, operational and secure.

Summary of Financial Benefits and Costs (attach backup)
1. Cost-benefit analysis (if required)

2. Major financial benefits

Reduction in vendor support and resources costs.

3. Total Cost ($000)

$6,026

4. Basis for estimate

Estimate was based on the cost of required software, labor, and contract services needed to achieve these technology modernization efforts.

CECONY IVR Modernization

Cost for this component of the project is estimated at $3,300,000 of Direct Labor, Material, Services

Bill Print Modernization

This effort will cost $1,153,400 to cover license and maintenance costs during the project.

Address Cleansing Modernization

This effort will cost $1,177,900 to software cost for development, test, production, and DR environments through the life of the project.

Cuflink Retirement

This effort will cost $395,000 for the design, build, testing, and deployment of 9 interface/extract programs in CC&B system to allow for retirement of legacy Cuflink system.

5. Conclusion

The project is critical for supporting daily business operations and moving to the latest software and hardware technologies and environment will help improve cyber compliance, application software management costs and reliability.

Project Risks and Mitigation Plan

Risk	Mitigation Plan
Compliance with end-of-life technologies	Work with vendors to identify timelines and develop and manage to project plans

Technical Evaluation/ Analysis

NA

Project Relationships (if applicable)

This impact all projects, initiatives and systems.

3. Funding Details

Historical Spend by Year ($000):

	Actuals 2017	Actuals 2018	Actuals 2019	Actuals 2020	Historic Year** (O&M only)	Forecast 2021
Capital						1,153
Implementation O&M*						
Regulatory Asset						

* * For Rate Case only

Total Request ($000):

Total Request by Year ($000):

	Request 2021	Request 2022	Request 2023	Request 2024	Request 2025	Request 2026
Capital	1,153	630	4,243	0	0	0
Implementation O&M*						
Regulatory Asset						

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

Capital Request by Elements of Expense ($000):

EOE	Request 2021	Request 2022	Request 2023	Request 2024	Request 2025	Request 2026
Labor						
M&S	363					
A/P	790	630	4,243			
Other						
Overheads						
Total	**1,153**	**630**	**4,243**	**0**	**0**	**0.0**

Total Gross Cost Savings / Avoidance by Year:

	Request 2021	Request 2022	Request 2023	Request 2024	Request 2025	Request 2026
O&M Savings						
O&M Avoidance						
Capital Savings						
Capital Avoidance						

Total Ongoing Maintenance Expense by Year:

	Request 2021	Request 2022	Request 2023	Request 2024	Request 2025	Request 2026
O&M						
Capital						

4. Definitions

Total Funding Request: All funding requested for program or project over program/project lifecycle, including all capital, O&M, retirement, and contingency expenses.

Total Contingency: Total contingency expense according to the Corporate Contingency Guidelines

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 if capital isn't replaced)

CECONY / Information Technology
2021-2023

1. Project / Program Summary

Type: ☒ Project ☐ Program	**Category: ☒ Capital ☐ O&M**
Work Plan Category: ☐ Regulatory Mandated ☒ Operationally Required ☒ Strategic	
Project/Program Title: Corporate Customer Group Application Rewrite Project	
Project/Program Manager: Nicole Pierre	**Project/Program Number (Level 1):**
Status: ☒ Initiation ☐ Planning ☐ Execution ☐ On-going ☐ Other: _____	
Estimated Start Date: 07/01/2021	**Estimated Date In Service: 05/31/2023**
A. Total Funding Request ($000) **Capital: $ 1,295** **O&M: $0**	**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:

- *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.*

The Corporate Customer Group (CCG) internet application was created in 1997, using current software of its time – classic ASP - to allow corporate customers to view all their electric, gas and steam accounts. The application displays billing, meter, payment, and usage information and allows download of account data from the site. In 2019, it was identified as an application for the new CC&B system under the CORE project to integrate with, however, initial review of the system revealed the application is out of compliance by cyber security and will not support even the basic changes required to integrate with the new CC&B system under the CORE project. A major application rewrite is required and will use the latest software to develop the following key enhanced features:

1. Login (Implement OKTA Authentication)

2. Intuitive ability to view, print, download all electric accounts, all gas accounts, all steam accounts and electric, gas, steam accounts all together. The account link allows the customer to view, print, download historical billing, usage, and meter information.

3. Ability to download 12 or 24 months of electric bills, gas bills, steam bills. Ability to download all electric meters, gas meters, steam meters, Elec and gas payments, steam payments, all TODL, all ICAP

4. A Home Page that displays summarized information of electric KWHR and charges, gas therms and charges, steam MLBS and charges. It also displays total outstanding balance, total payment made for the corp code.

5. Customers that are enrolled in summary bill can view their historical summary bills.

6. Ability for the CCG customer to send an update on their contact information to the Con Ed Corp Customer team.

7. Ability to manage customer corp codes through an admin page

8. Develop an API that will retrieve electric, gas and steam bill data from DB2, re-using the existing queries from the CCG app. This will be deployed on-prem and will be exposed in the cloud through Azure Hybrid Connection.

9. CC&B API Integration (2022) - Update CCG API (#8) to update the data source from DB2 to CC&B API.

10. Application will be developed using Angular and .NET CORE API framework; and will be hosted in Azure Cloud

11. Target device will be desktop/laptop browser

12. Design, Build, and Test an additional 13 high complexity integrations in CC&B as part of the CCG Application rewrite and connection to CC&B for billing and other key integrations to use real-time API calls.

The analysis, design, development, test and implementation is expected to follow the CORE CC&B timeline with work set to begin July 2021.

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.*

The technology upgrade and rewrite of the existing CCG application is needed because:

- It is a security risk since it is using an old technology (classic asp) and that technology has reached the end-of-life support as per Microsoft.
- Passwords are stored in plain text.
- It is very costly to maintain.
- The pages do not display correctly on latest IT standard of Chrome and Edge browsers.
- To necessitate the integration of key data points from/to the CORE CC&B Project.

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.

- This rewrite is necessary to integrate with the CC&B system.
- The rewrite of this application will address the critical needs of the external customers to be able to view with any browser.
- Revamping the application also meant that this internet application could pass accessibility tests in compliance with the Americans with Disabilities Act (ADA), Section 508 and provide technical specifications to improve the accessibility of web content, websites, and web applications across all devices for people with a wide range of disabilities—including auditory, cognitive, neurological, physical, speech, and visual disabilities.

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

Stay as is using existing infrastructure and technology, however, this is not viable option as the technology is obsolete and the code is not reusable for an upgrade.

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

Cyber Risk: Not keeping technologies up to current versions lead to cyber security vulnerabilities. Key applications remain on an unsupported technology requiring separate support resources, technologies, and infrastructure and leave the systems vulnerable for cyberattacks. In addition, security updates are not provided, and vendor support ends after a certain point, increasing the cyber risk on existing code if not migrated to a new standard. Also, unmasked user passwords are a security and cyber risk.

Risk 2

Increased Cost: Higher incremental support costs from hardware and software vendors. Older version maintenance eventually leads to incremental support costs.

Risk 3

Inability to integrate with new applications and newer technologies.

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, reliability, efficiency, and customer satisfaction as customers can now use the application regardless of browser.**
- **Diversity and inclusive internet website that complied with ADA accessibility laws**
- **New cyber and data security and protection with the use of OKTA login and admin page features.**

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.

Capital: $1,296,010.00

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.

The CCG application is used by external customers seeking data that will come from the new CC&B system. For example, the application displays billing, meter, payment, and usage information and allows download of account data from the site for customer electric, gas and steam accounts. If this project is not completed the application will not be able to get the required information from the new CC&B application. In addition, the application requires a technical upgrade as it is no longer in compliance with IT and cyber standards.

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.

Functional and technical application analysis performed.

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	**$422**	**$550**	**$323**		
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 / Information Technology
2022 - 2023

1. Project / Program Summary

Type: ☒ Project ☐ Program	**Category: ☒ Capital ☐ O&M**
Work Plan Category: ☐ Regulatory Mandated ☒ Operationally Required ☒ Strategic	
Project/Program Title: New ESCO Electronic Data Interchange Enhancement Project	
Project/Program Manager: Pierre, Nicole	**Project/Program Number (Level 1):**
Status: ☐ Initiation ☐ Planning ☒ Execution ☐ On-going ☐ Other: _____	
Estimated Start Date: 03/01/2022	**Estimated Date In Service: 05/31/2023**
A. Total Funding Request ($000) **Capital:** $630 **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:
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 (CECONY & O&R) is required by the PSC (Public Service Commission) as part of the Retail choice program to exchange files between the company and external marketers (Energy Service Companies or ESCOs) using EDI (Electronic Data Interchange) standards. Since the Retail choice program inception, the Retail Access market in the Company's service territory has grown to over 600,000 electric and gas customers and over 200 ESCOs. The combined number of EDI transactions for account changes, price changes, and monthly and historical usage requests is now close to 14.5 million per year. The new Oracle CC&B Customer Information System, as implemented by CORE, will also dramatically increase the use and volume of transactions within these files from the ESCOs. To ensure operational readiness and adjust to ever changing business needs, the RDX/EDI middleware team will make significant enhancements to the EDI functionality and tools including an EDI Portal, a test utility, and a data reconciliation dashboard:

- Develop an EDI Portal for reports and verify what is received or sent from the ESCOs are accounted for.

- Upgrade Sterling B2B Integrator (SBI) dashboard UI to add new features and increase reliability of RDX that allows EDI administrators to search on the data correlations captured.
- Develop a Test Utility that uses production quality data instead of mocked up data for regulatory testing
- Develop a Data Reconciliation feature - An RDX-RAIS data reconciliation and auditing framework will be implemented to ensure all inbound and outbound documents are reconciled.
- Build a Throttling Feature to increase processing power of the RDX/EDI system and optimize processing large files and volume of transactions.

Analysis, Design, Development, Testing and Implementation will follow the Oracle CC&B schedule with a start date of March 2022.

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.*

New functions, processes and development tools added to the RDX/EDI is critical to the operations of IT, the business and the 3rd party external marketers. These major upgrades provide new visibility into what is happening with the various transactions that must be processed and now allows for traceability, reprocessing, prevents backlogs of data processing and allows for easy root cause analysis when issues do occur. Listed are the significant design and development code enhancements:

Develop an EDI Portal for reports and verify what is received or sent from the ESCOs are accounted for:

- Design a data capture of all source and destination documents passing through the Sterling B2B Integrator (SBI) EDI Workflow for the purpose of search and reconciliation. Each source (or input) transaction should have a corresponding destination (or output) transaction.
- In the case of inbound X12 data from our partners, there are (2) destinations that need to be reconciled, the application data to the backend system and the functional acknowledgement back to the partner.
- A "*missing transaction*" report will be developed to flag missing destination transactions exceeding a configurable threshold (e.g., 60 minutes). This report will also include outbound responses to the external marketers that were generated from an inbound document.
- A "*daily audit*" report will be developed to show a complete reconciliation of all source and destination transactions. In addition, a summary of transaction counts by type and by status will be included.
- All reports will be delivered through email and/or archived daily at 7:00 AM.

Upgrade Sterling B2B Integrator (SBI) dashboard UI to add new features and increase reliability of RDX that allows EDI administrators to search on the data correlations captured, providing:

- Document Status (in progress, delivered, acknowledged, etc.)
- Document Reconciliation Status (source and destination)
- Document Correlation Search (e.g. common code, transaction ID)
- Document Download

Develop a Test Utility that uses production quality data instead of mocked up data for regulatory testing

The EDI Portal will include an option to carbon copy select data files (based on search criteria) from the production environment to non-production environment for parallel processing. An optional translation step may be specified in order to simulate new data processing scenarios (e.g. Tax Rate). This is critical functionality as All ESCOs participating in the Con Edison service territory must be Electronic Data Interchange (EDI) -certified by completing Phase III regulatory testing. Testing includes the exchange of connectivity information, submission of a statement of electronic data interchange readiness, connectivity testing, and transaction set testing. This test utility can now use production quality data instead of mocked up data that is prone to error.

Develop a Data Reconciliation feature A RDX-RAIS data reconciliation and auditing framework will be implemented to ensure all inbound and outbound documents are reconciled.

- A reporting portal will be developed outside of Sterling B2B Integrator (SBI)
- The SBI application will provide APIs to the reporting portal to provide the requisite processing metadata
- Reports and alerts will be generated for those unreconciled transactions to allow for manual intervention in a proactive and timely manner

Build a Throttling Feature to increase processing power of the RDX/EDI system and optimize processing large files and volume of transactions.

- New Design Change introduced for addressing RDX/EDI Bottle Necks and reprocessing mechanism for EDI Data.
- Increase storage and processing power by adding more MQ's for message processing
- Streamline the process by reprocessing transaction from the UI, in addition, providing business flexibility of viewing XML data generated from RAIS/TCIS. This feature introduces priority queue definition that helps process some low priority transaction based on priority in the queue.

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.

This upgrade will ensure that middleware stays in pace with IT enterprise development and architecture standards and keeps customer satisfaction rates high among the ESCOs and PSC reducing complaints about loss of transactions, performance, or end system outages (either on RAIS/TCIS side or the ESCO system) due to large volume of transactions flooding and crashing the applications or causing overall bottlenecks or slowdowns during high volume processing.

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
Stay as is an option. However, not practical as trend analysis and lessons learned from researching other utilities like Central Hudson reveal that accurate and complete processing of transactions is a critical feature especially working with external ESCOs who complain directly to the PSC and the press when issues occur.

Alternative 2 description and reason for rejection
Manual processing of files is an option, however, this is time intensive and waste of resource time and knowledge. It removes the ability for resources to work on the right work at the right time.

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
Failure of critical middleware software or performance issues will result in negative customer satisfaction.

Risk 2

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*

Increased reliability, efficiency and customer satisfaction.
Stronger relationships with ESCOs and external customers
Ensuring 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.

Third party external ESCOs and customers expect continued service reliability levels that meet their needs now and especially with the release of the CORE CC&B system when an explosion of transactions will be seen day 1. The New EDI Portal enhanced version of Legacy EDI Portal, with more features and easy navigation as compared to previous version also provides reconciliation for transactions with Retail Choice Systems. The addition of a new throttling feature addresses RDX/EDI Bottle Necks and adds a reprocessing mechanism for EDI Data. Increased processing power with the addition of more MQs mean a streamlined process of reprocessing transaction from the UI. Business flexibility of viewing XML data generated from RAIS/TCIS. New EDI Test Tool now allows the new portal in RDX to process EDI end to end files from Production in a lower environment enabling support team to easily reproduce production issues. Currently file can be reprocessed but there are limitations and dependency on RADEX ID's being generated from RDX system and end to end workflow till RDX cannot be tested. This will also enable business to test with real data in a lower environment with ESCO's. Currently testing is done with Mocked Data

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.

Trend analysis and benchmarking performed.

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).

As middleware, RDX/EDI sits between RAIS/TCIS application and the 3rd party external ESCO. These enhancements are critical to be in place for the CORE CC&B project in anticipation of the enormous volumes of transactions that will occur from go-live and after.

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		**$630**			
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 / Information Technology
2021 - 2023

1. Project / Program Summary

Type: ☒ Project ☐ Program	**Category: ☒ Capital ☐ O&M**
Work Plan Category: ☐ Regulatory Mandated ☒ Operationally Required ☒ Strategic	
Project/Program Title: Retail Choice Application Tech Obsolesce Modernization Project	
Project/Program Manager: Pierre, Nicole	**Project/Program Number (Level 1):**
Status: ☒ Initiation ☐ Planning ☐ Execution ☐ On-going ☐ Other: _____	
Estimated Start Date: 01/01/2021	**Estimated Date In Service: 12/31/2023**
A. Total Funding Request ($000) **Capital:** $372 **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:
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 and O&R IT department manages a portfolio of Retail Choice applications in support of our Customer Operations, Customer Energy Solutions and Energy Management organizations. IT is planning to modernize, significantly enhance and upgrade applications within this portfolio in association with IT standards and in preparation for the increase in transactions with the launch of the new CORE project including: Retail Access Information System (RAIS), Transportation Customer Information System (TCIS) and Common Data System (CDS).

These initiatives will ensure our assets are operationally ready - technically and functionally - to retrofit evolving business needs and bring these applications up to IT's enterprise standards resulting in significant additional functionality.

This includes:

- Transportation Customer Information System (TCIS) is used to track the gas retail choice customers and depends upon fast, secure, and scalable technology as a result we will perform:

- **TCIS COM+ upgrade**: Upgrade and coding of 37 batch jobs involved in the ESCO process for TCIS. This upgrade is a programmed conversion from COM+ legacy technologies to Windows Communication Foundation (WCF) technology.

- Retail Access Information System (RAIS) Batch is used to run all RAIS batch processes that include enrolling customers with marketers, removing customers from marketers, invoicing, and producing various reports. To quickly respond to ESCO requests and troubleshoot inquiries from the marketers, aka ESCOs there is a need to standardize and modernize the infrastructure and build scalable solutions to handle high volume (large files) resulting from these processes:

    - **Upgrade and Enhance Retail Choice Folder Structure:** Current production folder structures for Retail Choice System are not intuitive for locating files for troubleshooting production issues. The simplification and enhance folder structures will significantly improve root cause analysis turnaround time when there are production failures and when either the business or 3rd party external stakeholders, the ESCOs/marketers, identify issues that require triaging. This will become even more essential after CORE go-live as the number of transactions during cutover will increase exponentially.

    - **Upgrade Historical Usage and Cycle Usage to read large volume files:** Today, limitations exist in the capabilities in RAIS to handle large volume processing of Historical Usage and Cycle Usage requests. It can only process a single input file and in case files are overwritten by mainframe jobs preventing the opportunity to reprocess in case of failures. With the inception of CORE project, the opportunity now exists to build this new capability to handle huge file sizes and process multiple files in case the auto scheduler tool, AutoSys, fails to process the prior file.

    - **Add Performance Tuning and Logging to the RAIS account refresh process:** The current Account Refresh Process experiences suffers from slow processing performance and does not have an effective logging mechanism. This net new work will greatly increase performance and capabilities for faster issue identification, resolution, and troubleshooting.

    - **Upgrade Oracle Database Oracle 12 to 19**: Database Upgrade moves us from using obsolete technology that has already passed end-of-life.

- **Upgrade CDS backend currently using .Net 4.5** version in the CDS batch jobs. Moves us from using obsolete technology that has already passed end-of-life.

- **Migrate batch jobs from Windows 2008 servers to Windows 2016** for RAIS, TCIS and CDS. Moves us from using obsolete technology that has already passed end-of-life.

Analysis, Design, Development, Testing and Implementation will follow the Oracle CC&B schedule with a start date by mid-2021.

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.*

The objective of this project is to enforce enterprise application standards through modernization of obsolete technology. Obsolete technology leads to cyber risk and falling behind from a functionality perspective leads to inefficient use of software and ultimately leads to increased support costs. These upgrades are required as systems vendors keep phasing out support for the existing operating systems, databases, and applications and release new versions to provide enhanced security and increased functionality.

The main drivers of this effort are:

- Increase operational efficiencies by keeping applications functionally current
- Reduce technology obsolescence to mitigate risks
- Avoid losing vendor/software support

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.

Our long-range plan is to have a technically current set of steady state applications to support the enterprise. This strategy includes modernization of the application portfolio as well as maintaining technical currency to avoid cyber threat and functionality decline.

2. Supplemental Information

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

None.
Technology currency is the ongoing process of understanding how current an item of hardware or software is, compared to the latest available version. Managing technology currency is a vital part of operational resilience as organizations attempt to balance the cost associated with maintaining technology currency versus the risk posed. Servers, databases, desktop operating systems, as well as application upgrades and consolidation are necessary to comply with technology standards, cyber compliance, vendor compliance and PSC mandated requests.

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
Cyber Risk: Not keeping technologies up to current versions lead to cyber security vulnerabilities. Key applications remain on an unsupported technology requiring separate support resources, technologies, and infrastructure and leave the systems vulnerable for cyberattacks. In addition, security updates are not provided and vendor support ends after a certain point, increasing the cyber risk on existing code if not migrated to a new standard.

Risk 2

Increased Cost: Higher incremental support costs from hardware and software vendors. Older version maintenance eventually leads to incremental support costs.

Risk 3
Reduced availability of critical business applications. Software code must be upgraded or rewritten to meet business SLA's.

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*

Upgrading to the new standards will keep the applications and technologies current, operational and secure.

Summary of Financial Benefits and Costs (attach backup)
1. Cost-benefit analysis (if required)

2. Major financial benefits

3. Total cost ($000)

$372 (labor charges)

4. Basis for estimate

5. Conclusion

The project is critical for supporting daily business operations and moving to the latest software and hardware technologies and environment will help improve cyber compliance, application software management costs and reliability.

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: Compliance with end-of-life technologies
Mitigation plan: Work with vendors to identify timelines and develop and manage to project plans

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.

n/a

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).

Ongoing review of Tech Currency impact is necessary for all projects, initiatives and systems.

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		200	172		
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

Five Year
2024 - 2028 Capital Forecast

Summary T&D, Electric Production and Shared Services Capital Plan

Thousands ($000)

	2024	2025	2026	2027	2028	5 Year Total
Electric T&D						
System and Transmission	$370,399	$246,628	$377,133	$498,833	$677,756	$2,170,749
Substations	$773,449	$1,026,819	$1,398,086	$1,201,997	$1,052,321	$5,452,671
Distribution	$1,160,772	$1,199,754	$1,395,136	$1,444,916	$1,488,181	$6,688,760
Sub-total Electric T&D	**$2,304,620**	**$2,473,202**	**$3,170,355**	**$3,145,746**	**$3,218,257**	**$14,312,180**
Electric Interference	$185,313	$194,971	$206,315	$249,260	$259,000	$1,094,859
Total Electric T&D	**$2,489,933**	**$2,668,173**	**$3,376,670**	**$3,395,006**	**$3,477,257**	**$15,407,039**
Electric Production	$23,196	$19,601	$20,001	$20,701	$21,630	$105,129
Shared Services	$675,374	$653,264	$539,718	$516,360	$459,374	$2,844,090
Total Capital Expenditures	**$3,188,504**	**$3,341,037**	**$3,936,389**	**$3,932,066**	**$3,958,262**	**$18,356,258**
AMI	**$10,000**	**$0**	**$0**	**$0**	**$0**	**$10,000**
CES Electric	**$120,448**	**$124,892**	**$115,092**	**$119,946**	**$119,042**	**$599,419**
Light Duty Electric Vehicle Make-Ready Program	**$39,432**	**$47,932**	**$45,190**	**$46,997**	**$48,408**	**$227,958**

Note: 83% of Shared Services is allocated to Electric

S&TO Summary Capital Forecast

Thousands ($000)

Project/Program Description	2024	2025	2026	2027	2028	5 Year Total
Environmental Programs	$446	$452	$1,233	$1,233	$1,270	$4,634
Replacement	$18,000	$18,000	$18,000	$18,000	$18,450	$90,450
System Expansion	$218,401	$66,051	$0	$0	$0	$284,452
Risk Reduction	$128,152	$156,526	$351,250	$473,550	$651,959	$1,761,437
Safety and Security	$5,100	$5,200	$5,500	$4,900	$4,915	$25,615
Total S&TO	**$370,399**	**$246,628**	**$377,133**	**$498,833**	**$677,756**	**$2,170,749**
Interference	**$34,770**	**$47,500**	**$47,500**	**$46,500**	**$47,430**	**$223,700**
Total S&TO with Interference	**$405,169**	**$294,128**	**$424,633**	**$545,333**	**$725,186**	**$2,394,449**

S&TO Capital Projects Forecast

Thousands ($000)

Project/Program Description	2024	2025	2026	2027	2028	5 Year Total
Environmental						
Environmental Enhancements Program	$446	$452	$1,233	$1,233	$1,270	$4,634
Total Environmental	**$446**	**$452**	**$1,233**	**$1,233**	**$1,270**	**$4,634**
Information Technology						
Distribution Orders Enhancements	$300	$400	$400	$400	$412	$1,912
EMS Reliability AECC and ECC	$0	$0	$750	$750	$750	$2,250
Total Information Technology	**$300**	**$400**	**$1,150**	**$1,150**	**$1,162**	**$4,162**
Replacement						
Transmission Feeder Failures	$15,000	$15,000	$15,000	$15,000	$15,450	$75,450
Transmission Failures - Other	$3,000	$3,000	$3,000	$3,000	$3,000	$15,000
Total Replacement	**$18,000**	**$18,000**	**$18,000**	**$18,000**	**$18,450**	**$90,450**
System Expansion						
Amtrak PSA - OAK	$5,000	$0	$0	$0	$0	$5,000
Gowanus to Greenwood	$64,000	$11,000	$0	$0	$0	$75,000
Goethals to Fox Hills	$149,401	$55,051	$0	$0	$0	$204,452
Total System Expansion	**$218,401**	**$66,051**	**$0**	**$0**	**$0**	**$284,452**
Risk Reduction						
Pipe Enhancement Program	$29,250	$29,750	$30,150	$30,150	$30,150	$149,450
Joint Replacement Program	$10,500	$10,500	$13,000	$13,000	$13,000	$60,000
Dynamic Feeder Rating System Program	$760	$763	$1,500	$1,500	$1,500	$6,023
Overhead Transmission Structures Program	$3,000	$3,000	$2,300	$3,500	$4,300	$16,100
Modernization Program CECONY Electric Transmission Feeder Structure	$5,400	$5,399	$5,400	$5,400	$5,400	$26,999
Feeder 38R51 and 38R52 Replacement Project	$25,600	$0	$0	$0	$0	$25,600
Queensboro Bridge Risk Mitigation Project	$41,000	$80,000	$110,000	$109,000	$90,000	$430,000
Partial Replacement of Feeders M51 and M52	$0	$10,000	$168,000	$300,000	$300,000	$778,000
Feeder Replacement Program	$1,750	$1,750	$3,500	$3,500	$200,000	$210,500
Overhead Insulator Resiliency Program	$6,700	$10,300	$10,600	$2,700	$2,800	$33,100
Mobile Program Transmission Feeder Leak Detection	$300	$300	$300	$300	$309	$1,509
Rights of Way Road Access Upgrade Program	$1,000	$1,000	$1,000	$1,000	$1,000	$5,000
Feeder Management System Technology Transformation	$0	$0	$2,000	$0	$0	$2,000
System Operation Enhancement	$400	$500	$500	$500	$500	$2,400
EMS DevOps Upgrade	$2,492	$3,264	$3,000	$3,000	$3,000	$14,756
Total Risk Reduction	**$128,152**	**$156,526**	**$351,250**	**$473,550**	**$651,959**	**$1,761,437**
Safety and Security						
Overhead Tower Rapid Rail Program	$4,700	$4,700	$5,000	$4,400	$4,400	$23,200
ECC and AECC Facility Security	$400	$500	$500	$500	$515	$2,415
Total Safety and Security	**$5,100**	**$5,200**	**$5,500**	**$4,900**	**$4,915**	**$25,615**
Total S&TO	**$370,399**	**$246,628**	**$377,133**	**$498,833**	**$677,756**	**$2,170,749**
Interference	**$34,770**	**$47,500**	**$47,500**	**$46,500**	**$47,430**	**$223,700**
Total S&TO with Interference	**$405,169**	**$294,128**	**$424,633**	**$545,333**	**$725,186**	**$2,394,449**

Substation Summary Capital Forecast

Thousands ($000)

Project/Program Description	2024	2025	2026	2027	2028	5 Year Total
Environmental Programs	$11,000	$13,000	$13,000	$13,000	$13,000	$63,000
Replacement	$65,538	$58,460	$58,410	$58,830	$59,031	$300,269
System Expansion	$355,611	$623,864	$906,010	$708,633	$531,607	$3,125,725
Risk Reduction	$328,031	$318,213	$408,616	$409,422	$436,508	$1,900,790
Safety and Security	$13,269	$13,282	$12,050	$12,112	$12,175	$62,887
Total Substations Operations	**$773,449**	**$1,026,819**	**$1,398,086**	**$1,201,997**	**$1,052,321**	**$5,452,671**

Substations Operations Forecast

Thousands ($000)

Project/Program Description	2024	2025	2026	2027	2028	5 Year Total
Environmental						
Substation EH&S Risk Mitigation Program	$11,000	$13,000	$13,000	$13,000	$13,000	$63,000
Total Environmental	**$11,000**	**$13,000**	**$13,000**	**$13,000**	**$13,000**	**$63,000**
Risk Reduction						
Disconnect Switch Capital Upgrade Program	$4,175	$5,175	$5,175	$5,175	$5,175	$24,875
Retrofit Overdutied 13kV and 27kV Circuit Breaker Programs	$12,300	$12,800	$13,800	$13,800	$14,210	$66,910
Structural and Infrastructure Upgrades	$9,000	$12,400	$8,150	$8,395	$8,646	$46,591
Other Capital Equipment Upgrades	$1,829	$3,399	$3,485	$3,590	$3,697	$16,000
High Voltage Circuit Breaker Capital Upgrade Program	$12,000	$14,000	$20,000	$20,000	$20,000	$86,000
Reinforced Ground Grid Program	$4,100	$5,100	$6,100	$6,100	$6,283	$27,683
138Kv Disturbance Monitoring Program	$2,000	$3,800	$4,500	$4,500	$4,500	$19,300
U Type Bushing Replacement Program	$1,956	$3,539	$4,720	$1,300	$1,300	$12,815
Substation Data Acquisition Network	$12,000	$10,000	$12,000	$12,000	$12,000	$58,000
SSO Loss Contingency Area Stat Rapid Recov/Transm Resiliency Tsfs	$8,000	$0	$0	$0	$0	$8,000
Transmission Station Metering & SCADA Upgrades	$2,001	$2,610	$3,066	$3,158	$3,253	$14,088
Relay Protection Communication Upgrades	$9,920	$9,940	$16,500	$16,500	$16,500	$69,360
Pothead Pressure Alarms	$150	$150	$150	$155	$159	$764
Auxiliary Station Equipment Program	$1,100	$1,100	$1,000	$1,000	$1,030	$5,230
Cap and Pin Insulator Replacement Program	$1,000	$1,000	$1,000	$1,030	$1,061	$5,091
Erosion Protection and Drainage Upgrade Program	$3,500	$5,000	$0	$0	$0	$8,500
Control Cable Upgrade Program	$3,000	$3,000	$4,120	$4,244	$4,371	$18,735
Substation Enclosure Upgrade Program	$1,400	$1,400	$0	$0	$0	$2,800
Gas Insulated Substation Replacement Program	$26,300	$11,000	$31,500	$31,500	$31,500	$131,800
Light and Power System Upgrades	$1,000	$1,000	$1,000	$1,000	$1,000	$5,000
Area Substation Phased Replacement Program	$17,200	$16,700	$30,000	$30,900	$31,827	$126,627
Stabilization of Pothead Stand Supports/Settlement	$1,000	$1,000	$2,500	$2,500	$2,500	$9,500
Relay Modifications Program	$45,000	$45,000	$40,000	$40,000	$62,912	$232,912
Condition Based Monitoring	$12,000	$14,000	$15,450	$15,914	$16,391	$73,755
Substation Transformer Replacement Program	$93,000	$91,500	$124,000	$124,000	$124,000	$556,500
Roof Replacement Program	$1,500	$2,000	$4,800	$4,944	$5,092	$18,336
DC System Upgrade Program	$4,100	$4,100	$5,100	$5,100	$5,253	$23,653
High Voltage Test Set Program	$2,000	$1,500	$2,800	$2,800	$2,800	$11,900
Area Substation Reliability	$10,000	$10,500	$10,800	$10,800	$10,800	$52,900
Fire Suppression System Upgrades	$6,500	$5,500	$10,000	$10,000	$10,000	$42,000
Category Alarm Program Various	$1,300	$1,400	$2,200	$2,200	$2,266	$9,366
Pumping Plant Improvement Program	$2,900	$3,400	$3,900	$4,017	$4,138	$18,355
Circuit Switcher Replacement Program	$1,400	$1,400	$2,800	$3,900	$4,017	$13,517
East River Automation - Upgrade The 69KV Yard	$2,000	$0	$0	$0	$0	$2,000
Protection, Automation and Control Program	$2,900	$2,800	$13,000	$18,900	$19,827	$57,427
Elmsford 138kV Disconnect Switches	$500	$3,000	$0	$0	$0	$3,500
Sherman Creek Automation and Protection Upgrade	$8,000	$8,000	$5,000	$0	$0	$21,000
Total Risk Reduction	**$328,031**	**$318,213**	**$408,616**	**$409,422**	**$436,508**	**$1,900,790**
System Expansion						
Emergent Load Relief Program	$500	$500	$1,100	$1,133	$1,167	$4,400
Hudson Avenue DSS	$6,000	$0	$0	$0	$0	$6,000
Bensonhurst 38B15T and TR10 Installation	$10,000	$8,000	$0	$0	$0	$18,000
Parkview Transformer #5 and associated feeder	$3,000	$20,005	$40,000	$90,000	$21,640	$174,645
Establish Gateway Area Substation	$20,000	$102,000	$370,000	$245,000	$343,000	$1,080,000
Newtown TR4 and 138kV Feeder 38Q05 From Vernon	$27,200	$33,000	$33,000	$10,000	$11,800	$115,000
Glendale TR5 and 38Q05 Extension	$0	$0	$10,000	$35,000	$0	$45,000
Idlewild Area Substation - CLCPA	$56,373	$80,950	$117,600	$77,000	$38,000	$369,923
Brooklyn Clean Energy Hub - CLCPA	$162,000	$243,000	$162,000	$121,500	$41,000	$729,500
Eastern Queens Switching Station - CLCPA	$70,538	$136,409	$172,310	$129,000	$75,000	$583,257
Total System Expansion	**$355,611**	**$623,864**	**$906,010**	**$708,633**	**$531,607**	**$3,125,725**
Replacement						
Failed Substation Transformer Program	$46,500	$46,500	$46,500	$46,500	$46,500	$232,500
Failed Substation Equipment Other than Transformers	$11,038	$11,960	$11,910	$12,330	$12,531	$59,769
Hellgate Dock Refurbishment (SSO Portion)	$8,000	$0	$0	$0	$0	$8,000
Total Replacement	**$65,538**	**$58,460**	**$58,410**	**$58,830**	**$59,031**	**$300,269**
Safety and Security						
Critical Infrastructure Protection (NERC) Security Upgrades	$639	$652	$1,000	$1,030	$1,061	$4,382
Substations Security Enhancement Program	$12,000	$12,000	$10,000	$10,000	$10,000	$54,000
Cable Termination Platform Program	$630	$630	$1,050	$1,082	$1,114	$4,505
Total Safety and Security	**$13,269**	**$13,282**	**$12,050**	**$12,112**	**$12,175**	**$62,887**
Total Substations Operations	**$773,449**	**$1,026,819**	**$1,398,086**	**$1,201,997**	**$1,052,321**	**$5,452,671**

Electric Distribution Capital Forecast Summary

Thousands ($000)

Project/Program Description	2024	2025	2026	2027	2028	5 Year Total
New Business	$207,606	$205,500	$214,940	$232,703	$239,687	$1,100,436
Replacements	$460,037	$459,598	$484,106	$517,164	$532,742	$2,453,646
System Expansion	$113,192	$127,004	$134,869	$93,069	$69,012	$537,147
Risk Reduction	$199,284	$192,189	$240,926	$258,727	$258,281	$1,149,407
Environmental (Oil Minders)	$1,409	$1,438	$1,700	$1,700	$1,751	$7,998
Equipment Purchases	$148,600	$148,600	$215,862	$209,944	$215,492	$938,498
Storm Hardening	$30,644	$65,425	$102,734	$131,610	$171,216	$501,629
Total Electric Distribution	**$1,160,772**	**$1,199,754**	**$1,395,136**	**$1,444,916**	**$1,488,181**	**$6,688,760**
Interference	**$150,543**	**$147,471**	**$158,815**	**$202,760**	**$211,570**	**$871,159**
Total Electric Distribution with Interference	**$1,311,315**	**$1,347,225**	**$1,553,951**	**$1,647,676**	**$1,699,751**	**$7,559,919**
Light Duty Electric Vehicle Make-Ready Program	**$39,432**	**$47,932**	**$45,190**	**$46,997**	**$48,408**	**$227,958**
Total Electric Distribution with Interference & EV Charging	**$1,350,747**	**$1,395,157**	**$1,599,141**	**$1,694,673**	**$1,748,159**	**$7,787,877**
Jamaica Load Area Split (Springfield)	**$22,400**	**$82,800**	**$79,100**	**$47,500**	**$10,300**	**$242,100**
Total Electric Distribution with Interference, EV Charging & Jamaica	**$1,373,147**	**$1,477,957**	**$1,678,241**	**$1,742,173**	**$1,758,459**	**$8,029,977**

Electric Distribution Capital Projects Forecast

Thousands ($000)

Project/Program Description	2024	2025	2026	2027	2028	5 Year Total
New Business						
New Business Capital	$177,600	$177,500	$184,034	$201,797	$207,853	$948,784
Meter Installation	$30,006	$28,000	$30,906	$30,906	$31,833	$151,652
Total New Business	**$207,606**	**$205,500**	**$214,940**	**$232,703**	**$239,687**	**$1,100,436**
Replacement						
Overhead Emergency Response	$66,803	$66,348	$71,942	$81,354	$83,789	$370,235
Primary Cable Replacement (OAs, FOTs, C&D Fault)	$100,002	$100,003	$104,940	$109,135	$112,411	$526,491
Secondary Open Mains	$137,835	$138,003	$146,236	$152,074	$156,701	$730,850
Service Replacements (Temporary Services and Bridges)	$72,430	$72,430	$74,609	$77,586	$79,912	$376,966
Streetlights (Including Conduit)	$27,236	$27,236	$28,054	$29,173	$30,050	$141,748
Targeted Direct Buried Cable Replacement	$7,499	$7,500	$7,501	$14,996	$15,447	$52,943
Transformer Installation	$48,231	$48,078	$50,825	$52,845	$54,434	$254,413
Total Replacement	**$460,037**	**$459,598**	**$484,106**	**$517,164**	**$532,742**	**$2,453,646**
System Expansion						
Brownsville Area Load Relief	$41,000	$37,037	$25,000	$2,000	$0	$105,037
Crown Heights Network Split	$5,000	$17,482	$40,312	$40,392	$16,814	$120,000
Ed Koch Queensboro Bridge 13kV Riser Replacement	$750	$1,000	$1,648	$0	$0	$3,398
Network Transformer relief	$10,860	$7,992	$11,295	$11,759	$12,113	$54,019
NonNetwork Fdr Relief (Open Wire)	$6,287	$5,900	$7,489	$7,802	$8,037	$35,514
Overhead Transformer Relief	$2,300	$2,294	$2,363	$2,462	$2,535	$11,955
Primary Cable Crossing (B/W City Island, Riverdale, Croton River, and B/Q Flushing)	$2,000	$22,501	$4,700	$0	$0	$29,201
Primary Feeder Relief	$6,271	$5,595	$10,785	$11,188	$11,523	$45,360
Secondary Mains Load Relief	$2,925	$1,999	$7,277	$7,566	$7,794	$27,561
W42nd St No. 1 to Astor Transfer	$2,000	$0	$0	$0	$0	$2,000
West Bronx - Randall's Island Reconfiguration Program	$8,100	$0	$0	$0	$0	$8,100
Williamsburg Network Improvement	$23,700	$19,104	$24,000	$9,900	$10,197	$86,901
Yorkville Crossings and Feeder Relief	$2,000	$6,100	$0	$0	$0	$8,100
Total System Expansion	**$113,192**	**$127,004**	**$134,869**	**$93,069**	**$69,012**	**$537,147**
Risk Reduction						
Critical Facility Program	$9,000	$9,000	$0	$0	$0	$18,000
Non-Network Reliability	$47,298	$48,201	$78,284	$80,072	$81,028	$334,884
Non-Network Resiliency with FLISR	$2,100	$2,100	$0	$0	$0	$4,200
Pole Inspection and Treatment (PIT) Program (C-Truss)	$2,334	$2,332	$2,403	$2,499	$2,574	$12,142
Pressure, Temperature and Oil Sensors	$943	$944	$2,060	$2,142	$2,207	$8,297
Primary Feeder Reliability	$51,100	$52,200	$65,334	$61,813	$56,907	$287,353
Remote Monitoring System	$3,222	$3,222	$3,319	$3,451	$3,555	$16,769
Shunt Reactors	$1,000	$1,000	$5,150	$5,356	$5,517	$18,023
Smart Sensors	$2,800	$2,800	$15,553	$16,020	$16,500	$53,673
Transformer Vault and Structures Modernization	$40,051	$33,051	$17,871	$34,585	$35,623	$161,181
Underground Secondary Reliability Program	$22,000	$21,999	$30,690	$31,918	$32,874	$139,480
USS Projects - 4kv USS Switchgear House Replacement	$10,731	$9,631	$13,526	$13,932	$14,350	$62,170
USS Projects - Unit Substations Transformer Replacement Program	$3,902	$3,902	$4,019	$4,139	$4,264	$20,225
USS Projects - Unit Substation Modernization	$638	$638	$657	$677	$697	$3,308
USS Projects - Unit Substation Upgrade and Improvement	$166	$169	$1,030	$1,061	$1,093	$3,519
Vented Covers for Underground Structures	$1,000	$1,000	$1,030	$1,061	$1,093	$5,184
Wainwright - Willowbrook Stepdown Transformer Installations	$1,000	$0	$0	$0	$0	$1,000
Total Risk Reduction	**$199,284**	**$192,189**	**$240,926**	**$258,727**	**$258,281**	**$1,149,407**
Environmental (Oil Minders)	**$1,409**	**$1,438**	**$1,700**	**$1,700**	**$1,751**	**$7,998**
Equipment Purchases						
Transformer Purchases	$139,600	$139,600	$195,262	$189,944	$194,892	$859,298
Meter Purchase	$9,000	$9,000	$20,600	$20,000	$20,600	$79,200
Total Equipment Purchases	**$148,600**	**$148,600**	**$215,862**	**$209,944**	**$215,492**	**$938,498**
Storm Hardening						
Selective Undergrounding	$25,000	$25,000	$0	$0	$0	$50,000
Substation Resiliency	$5,644	$5,644	$5,644	$5,644	$5,644	$28,220
Primary Feeder Reliability - Resiliency	$0	$9,121	$15,251	$21,997	$29,416	$75,786
Selective Undergrounding - Resiliency	$0	$10,000	$50,000	$70,000	$100,000	$230,000
Non-Network Reliability Program - Resiliency	$0	$8,560	$10,263	$12,017	$13,823	$44,663
Non-Network Resiliency with FLISR Program - Resiliency	$0	$0	$2,574	$2,652	$2,732	$7,958
Critical Facilities Program - Resiliency	$0	$0	$9,301	$9,600	$9,901	$28,802
Submersible Equipment - Resiliency	$0	$7,100	$9,700	$9,700	$9,700	$36,200
Total Storm Hardening	**$30,644**	**$65,425**	**$102,734**	**$131,610**	**$171,216**	**$501,629**
Total Electric Distribution	**$1,160,772**	**$1,199,754**	**$1,395,136**	**$1,444,916**	**$1,488,181**	**$6,688,760**
Electric Interference	**$150,543**	**$147,471**	**$158,815**	**$202,760**	**$211,570**	**$871,159**
Total Electric Distribution with Interference	**$1,311,315**	**$1,347,225**	**$1,553,951**	**$1,647,676**	**$1,699,751**	**$7,559,919**
EV Charging	**$39,432**	**$47,932**	**$45,190**	**$46,997**	**$48,408**	**$227,958**
Total Electric Distribution with Interference & EV Charging	**$1,350,747**	**$1,395,157**	**$1,599,141**	**$1,694,673**	**$1,748,159**	**$7,787,877**
Jamaica Load Area Split (Springfield)	**$22,400**	**$82,800**	**$79,100**	**$47,500**	**$10,300**	**$242,100**
Total Electric Distribution with Interference, EV Charging & Jamaica	**$1,373,147**	**$1,477,957**	**$1,678,241**	**$1,742,173**	**$1,758,459**	**$8,029,977**

Customer Energy Solutions - Electric Forecast

Thousands ($000)

Project/Program Description	2024	2025	2026	2027	2028	5 Year Total
21151526 - LV 1 - REV - DSPP & 27104287 - L1_REV - CVO 23	$61,336	$61,836	$47,100	$47,100	$47,100	$264,472
23322939 - L1_Storage	$17,917	$17,917	$41,492	$46,346	$47,737	$171,409
23322926-L1_Grid visualization platform ADMS (CES - IT)	$13,000	$13,000	$13,000	$13,000	$13,390	$65,390
25508505 - L1_Integrated Energy Data Resource	$3,520	$3,000	$3,000	$3,000	$0	$12,520
27132023 - L1_Brownsville DRI Battery Storage System	$6,958	$21,222	$0	$0	$0	$28,180
25508535 - L1_Grid Edge Renewable Lab	$2,250	$2,250	$5,500	$5,500	$5,665	$21,165
27166905 - L1_Pole Mounted Energy Storage System	$667	$667	$0	$0	$0	$1,333
25560275 - L1_MR DER for DAC and LMI	$14,800	$5,000	$5,000	$5,000	$5,150	$34,950
Total CES Electric	**$120,448**	**$124,892**	**$115,092**	**$119,946**	**$119,042**	**$599,419**
AMI	**$10,000**	**$0**	**$0**	**$0**	**$0**	**$10,000**

Electric Production Capital Forecast Summary

Thousands ($000)

Project/Program Description	2024	2025	2026	2027	2028	5 Year Total
Environmental	$12,696	$6,300	$3,000	$0	$2,000	$23,996
Replacement	$6,500	$7,601	$15,001	$19,001	$15,000	$63,103
Risk Reduction	$3,000	$3,200	$2,000	$1,700	$4,500	$14,400
Safety/Security	$1,000	$2,500	$0	$0	$130	$3,630
Total Electric Production	**$23,196**	**$19,601**	**$20,001**	**$20,701**	**$21,630**	**$105,129**

Electric Production Capital Projects Forecast

Thousands ($000)

Project/Program Description	2024	2025	2026	2027	2028	5 Year Total
Environmental						
Environmental - EP - East River	$6,000	$4,000	$3,000	$0	$1,000	$14,000
Environmental - EP - 74th Street	$4,200	$2,300	$0	$0	$500	$7,000
Environmental - EP - 59th Street	$2,496	$0	$0	$0	$500	$2,996
Total Environmental	**$12,696**	**$6,300**	**$3,000**	**$0**	**$2,000**	**$23,996**
Replacement						
Balance of Plant Replacement Projects - EP - ER	$1,000	$0	$6,001	$1,000	$4,000	$12,001
Instrument & Control Replacement Projects - EP-ER	$1,500	$400	$2,000	$0	$5,000	$8,900
Major Equipment Replacement Projects - EP - ER	$2,000	$0	$2,000	$16,001	$5,000	$25,001
Power Distribution Replacement Projects - EP - ER	$2,000	$7,201	$5,000	$2,000	$1,000	$17,201
Total Replacement	**$6,500**	**$7,601**	**$15,001**	**$19,001**	**$15,000**	**$63,103**
Risk Reduction						
Balance of Plant Risk Reduction Projects - EP - ER	$0	$200	$2,000	$1,700	$4,000	$7,900
Civil & Structural Projects - EP - East River	$1,800	$2,700	$0	$0	$500	$5,000
Instrument & Control Risk Reduction Projects-EP-ER	$200	$300	$0	$0	$0	$500
Mechanical Facilities - EP - ER	$800	$0	$0	$0	$0	$800
Power Distribution Risk Reduction Projects - EP - ER	$200	$0	$0	$0	$0	$200
Total Risk Reduction	**$3,000**	**$3,200**	**$2,000**	**$1,700**	**$4,500**	**$14,400**
Safety/Security						
Safety / Security - EP - ER	$1,000	$2,500	$0	$0	$130	$3,630
Total Safety/Security	**$1,000**	**$2,500**	**$0**	**$0**	**$130**	**$3,630**
Total Electric Production	**$23,196**	**$19,601**	**$20,001**	**$20,701**	**$21,630**	**$105,129**

Shared Services Capital Forecast Summary

Thousands ($000)

Project/Program Description	2024	2025	2026	2027	2028	Total
Total - Strategic IT Projects	$398,252	$323,305	$329,514	$297,483	$236,931	$1,585,484
Total - Facility Projects	$159,786	$192,820	$137,255	$116,501	$120,068	$726,430
Total - General Equipment	$117,337	$137,139	$72,949	$102,376	$102,376	$532,176
Total CECONY Shared Services	**$675,374**	**$653,264**	**$539,718**	**$516,360**	**$459,374**	**$2,844,090**

Shared Services and Common Forecast

Thousands ($000)

Project/Program Description	2024	2025	2026	2027	2028	5 Year Total
Facilities Projects						
30 Flatbush Lease-Exit Strategy	$5,547	$36,022	$47,237	$0	$0	$88,805
3rd Ave Yard Transportation Garage Demolition	$9,002	$0	$0	$0	$0	$9,002
Astoria Southwest Storm Water System Corrective Action Plan	$2,499	$0	$0	$0	$0	$2,499
Electric Vehicle Charging Infrastructure	$2,500	$3,002	$3,001	$3,254	$3,254	$15,011
Facilities Buildings and Yards - (Energy Efficiency Program)	$17,378	$4,358	$5,009	$15,691	$15,691	$58,127
Facilities Buildings and Yards - (Roof Replacement Program)	$4,003	$3,189	$5,962	$15,001	$15,301	$43,456
Facilities Buildings and Yards All Other (Safety Environmental Regulatory)	$3,003	$4,811	$8,998	$18,009	$18,009	$52,830
Facilities Critical Infrastructure Short Term Priority_Programs	$13,593	$13,582	$16,761	$25,000	$25,000	$93,936
Facilities Security Upgrade Program- Tier 1	$3,500	$1,501	$2,999	$6,001	$6,001	$20,002
Facilities Service Center Renovations	$5,001	$8,001	$10,003	$15,001	$15,001	$53,006
Fuel Station Upgrades	$2,014	$5,066	$0	$0	$0	$7,080
Perimeter Enhancement Program	$1,700	$1,700	$2,999	$3,119	$3,119	$12,638
Sherman Creek Service Center	$77,056	$95,158	$8,819	$0	$0	$181,032
Third Avenue New Transportation Building	$3,987	$6,017	$5,001	$0	$0	$15,005
Worth Street Site Master Plan	$9,004	$10,415	$20,467	$15,425	$18,691	$74,001
Total - Facility Projects	**$159,786**	**$192,820**	**$137,255**	**$116,501**	**$120,068**	**$726,430**
Strategic IT Projects						
NYISO revenue metering daily reports	$0	$0	$181	$181	$181	$543
Third Party Risk Management	$0	$1,000	$250	$250	$250	$1,750
Resiliency Outage Communication Program	$0	$2,210	$2,097	$2,097	$2,097	$8,501
Strategic Analytics - As Billed - Revenue Analytics (SARA)	$0	$2,055	$2,433	$2,433	$2,433	$9,354
Customer Relationship Management (CRM)	$0	($0)	$6,000	$6,000	$6,000	$18,000
Corporate Security - Cyber forensic equipment	$118	$121	$260	$270	$270	$1,040
Distribution Simulator	$143	$0	$0	$0	$0	$143
Construction Technology Improvements	$200	$200	$200	$200	$200	$1,000
ERM - Archer Software	$221	$0	$0	$0	$0	$221
Contingency Analysis Program (CAP) - Phase 2	$239	$239	$0	$0	$0	$478
OCS Implementation for HeavyBid and P6 Loader	$297	$297	$297	$297	$297	$1,487
Integration of virtual reality into Substation Operating Orders	$300	$0	$0	$0	$0	$300
Soft Tissue Injury Prevention Project	$300	$0	$0	$0	$0	$300
Forecasting Services Compliance with Market Changes and MetrixIDR Upgrades	$329	$148	$450	$450	$450	$1,827
Central Operations Battery Monitoring Systems	$335	$0	$335	$335	$335	$1,340
Site Safety System Enhancements	$350	$350	$0	$0	$0	$700
Feeder Ratings System Replacement in Maximo	$360	$334	$334	$334	$0	$1,361
Operation Management System at ECC	$367	$367	$400	$400	$400	$1,934
TNVS WEB	$380	$380	$500	$500	$500	$2,260
Obsolete Oracle GRC Software Replacement and Enterprise SoD Tool	$390	$0	$0	$0	$0	$390
Gas Price Forecasting Computer Model (SENDOUT replacement)	$392	$0	$0	$0	$0	$392
District Operator Task Managing System	$400	$0	$800	$800	$800	$2,800
NYISO - PJM Energy and Capacity Daily Reconciliations - TODRS	$411	$414	$455	$455	$455	$2,190
Central Operations Condition Monitoring and Asset Health	$540	$0	$0	$0	$0	$540
AutoCAD Phase 2 (Enginering Software & Equipment Upgrade)	$550	$550	$800	$800	$800	$3,500
Central Operations Tableau to Power Bi Migration (Const)	$575	$575	$500	$500	$500	$2,650
Construction,Gas Mobile Migration (Angular)	$575	$0	$0	$0	$0	$575
Enterprise Architecture Modernization	$600	$300	$0	$0	$0	$900
Phased Replacement of Legal Technology	$608	$542	$4,784	$1,823	$1,823	$9,579
Utilizing AMI data for firm and interruptible gas marketer forecasting and RCIS migration	$747	$0	$0	$0	$0	$747
Learning and Inclusion Digital Learning Transformation	$850	$620	$1,500	$1,500	$1,500	$5,970
EBS Exa platform replacement	$935	$0	$0	$0	$0	$935
Business Enablement (PACE - Digital Factory)	$1,000	$1,000	$0	$0	$0	$2,000
Operational Technology Network Phase II	$1,000	$500	$0	$0	$0	$1,500
Bill Pay Expansion	$1,000	$1,000	$1,000	$1,000	$1,000	$5,000
Electric - ARM Replacement	$1,000	$0	$19,000	$19,000	$19,000	$58,000
Analytics Center of Excellence - EDAP enhancements	$1,170	$1,170	$900	$900	$900	$5,040
Corporate Security - Company Wide Camera Rollout Program	$1,200	$1,200	$1,200	$1,200	$1,200	$6,000
Rate Case Enhancements	$1,263	$1,263	$1,263	$1,263	$1,263	$6,315
Construction Paving App (SmartApps)	$1,265	$0	$0	$0	$0	$1,265
Budget System Enhancements	$1,500	$1,500	$1,500	$1,500	$1,500	$7,500
Substation Technology Improvements Program	$1,500	$1,500	$2,500	$2,500	$2,500	$10,500
Corporate Security NVR and DVR replacements	$1,500	$1,500	$1,500	$1,560	$1,560	$7,620
EM Gas Distribution Forecasting Model	$1,508	$0	$0	$0	$0	$1,508
Outage Communication Program	$1,600	$1,890	$873	$873	$873	$6,109
AMI Ops Control Center Analytics Program	$1,700	$0	$0	$0	$0	$1,700
Contact Center Cloud	$1,700	$300	$0	$0	$0	$2,000
Fraud Data Analytics Platform	$1,700	$1,700	$1,700	$1,700	$1,700	$8,500
Customer Business Intelligence and Decisioning	$2,000	$2,000	$4,000	$4,000	$4,000	$16,000
AMI Business Analytics	$2,002	$2,002	$0	$0	$0	$4,004
Customer Operations Journey Mapping	$2,200	$2,000	$1,900	$1,900	$1,900	$9,900
2024 Allegro Replacement or Upgrade	$2,208	$1,258	$0	$0	$0	$3,466
Cyber Security and NERC Compliance	$2,275	$1,600	$1,300	$1,300	$1,300	$7,775
WMS Sustainability Project	$2,299	$1,324	$3,000	$3,000	$3,000	$12,622
Back Office Automation - Agent Tools	$2,333	$2,333	$2,500	$2,500	$2,500	$12,166
IT System Testing COE	$2,500	$625	$0	$0	$0	$3,125
Customer Data Sharing	$2,500	$2,500	$2,500	$2,500	$3,000	$13,000
Data Integration Modernization	$2,750	$2,850	$1,900	$1,900	$1,900	$11,300
Protective Relay Settings Repository	$3,000	$0	$0	$0	$0	$3,000
Cyber Security Infrastructure	$3,000	$3,000	$3,000	$3,000	$3,000	$15,000
OMS IT System Hardening	$3,010	$4,152	$3,901	$3,901	$3,901	$18,863
Oracle EBS ERP Cloud Migration	$3,131	$4,697	$50,570	$66,429	$5,711	$130,538

Shared Services and Common Forecast continued

Thousands ($000)

Project/Program Description	2024	2025	2026	2027	2028	5 Year Total
Retail Access System Replacement	$3,561	$17,800	$7,700	$7,700	$7,700	$44,461
Virtual Assistants	$3,830	$3,030	$3,700	$3,700	$3,700	$17,960
Enterprise Unifier Software Project - Phase 2	$4,000	$3,100	$1,550	$1,550	$1,550	$11,750
Technology Currency and Sustainability	$4,036	$4,121	$3,000	$3,000	$3,000	$17,157
Designer XI Implementation (GIS)	$4,210	$4,200	$0	$0	$0	$8,410
Grid Mod Data Analytics Use Cases	$4,484	$4,484	$4,484	$4,484	$4,484	$22,418
Data Governance Program	$4,608	$2,333	$4,500	$4,500	$4,500	$20,441
End User Computing	$4,650	$4,095	$0	$0	$0	$8,745
Privacy Readiness Program	$5,000	$0	$2,000	$2,000	$2,000	$11,000
Outage Management System - Phase Four	$5,500	$5,172	$3,401	$3,401	$3,401	$20,874
AMI Enhancements Program	$7,000	$15,219	$6,000	$6,000	$6,000	$40,219
Data Center Improvements (Server Farm Infrastructure)	$7,000	$8,548	$2,585	$2,585	$2,585	$23,303
New Customer Service System Enhancements	$7,800	$7,800	$6,500	$6,500	$6,500	$35,100
Control Center Resiliency	$8,000	$8,000	$4,000	$4,000	$4,000	$28,000
New Customer Service System	$8,431	$0	$0	$0	$0	$8,431
Mobility	$10,000	$10,000	$11,000	$11,000	$11,000	$53,000
Construction Migration (Contractor Payment System Work Tracking)	$10,094	$0	$0	$0	$0	$10,094
Cybersecurity	$10,953	$11,833	$13,207	$13,207	$13,207	$62,408
Customer Recommendation & Analysis Tools	$12,000	$11,000	$6,500	$6,500	$6,500	$42,500
CCTN Program	$12,000	$12,000	$14,654	$14,654	$14,654	$67,962
Digital Customer Experience (DCX)	$14,056	$13,020	$12,750	$12,750	$12,750	$65,326
Customer Operations Data Analytics	$15,630	$14,630	$19,900	$19,900	$19,900	$89,960
Grid Modernization Communications Infrastructure Phase 2	$16,284	$16,284	$16,284	$16,284	$16,284	$81,420
Oracle HCM Cloud Implementation	$18,000	$0	$0	$0	$0	$18,000
Maximo Consolidation Program Phase 1	$24,956	$18,071	$12,218	$12,218	$12,218	$79,679
Technology Modernization Program	$29,000	$28,000	$0	$0	$0	$57,000
M365	$29,845	$0	$0	$0	$0	$29,845
eGIS Implementation Phase 3	$45,000	$45,000	$45,000	$0	$0	$135,000
Total - Strategic IT Projects	**$398,252**	**$323,305**	**$329,514**	**$297,483**	**$236,931**	**$1,585,484**
General Equipment						
XM1 Tier 1 - Office Furniture	$700	$700	$700	$2,500	$2,500	$7,100
XM2 - Vehicles	$85,933	$103,830	$36,100	$55,950	$55,950	$337,763
XM3 Tier 1 - Stores Equipment	$437	$437	$437	$600	$600	$2,511
XM 4 - Shop Equipment - Rollup	$361	$361	$361	$375	$375	$1,834
XM5 and 15 Tier 1 - Laboratory Equipment (Testing and Chemical)	$3,298	$3,079	$3,000	$6,000	$6,000	$21,377
XM6 Tier 1 - Tools and Work Equipment	$5,042	$4,380	$4,000	$8,000	$8,000	$29,421
XM7 Tier 1 - Miscellaneous and Safety Equipment	$900	$900	$900	$1,500	$1,500	$5,700
XM8 Telecommunications Equipment Priority 1	$4,121	$4,262	$2,500	$2,500	$2,500	$15,883
XM10 Tier 1_2 Computer Equipment Critical Infrastructure	$16,545	$19,191	$24,951	$24,951	$24,951	$110,587
Total - General Equipment	**$117,337**	**$137,139**	**$72,949**	**$102,376**	**$102,376**	**$532,176**
Total CECONY Shared Services	**$675,374**	**$653,264**	**$539,718**	**$516,360**	**$459,374**	**$2,844,090**