CONSOLIDATED EDISON COMPANY OF NEW YORK, INC.

INFORMATION TECHNOLOGY PANEL
UPDATE/CORRECTION

Q. Please state the Panel member's names.

A. Our names are Jeannine Haggerty, Manoj Chouthai, Allisyn Glasser, James Prettitore, Mikhail Falkovich, Thomas Langlois, Frank LaRocca, Aleksandra Pooley, and Denise Reid.

Q. What is the purpose of the Panel's update and correction testimony?

A. This testimony:

- Corrects a chart (p. 27 of our initial testimony) of the expected incremental full time employees associated with the projects in this testimony, which did not reflect all incremental employees associated with all projects in this testimony.
- Makes changes to six whitepapers, transferring two whitepapers into IT as exhibits and updating two whitepapers, and adds two new whitepapers for projects not previously included in this filing.

Q. Has the Panel updated any exhibits as a result of these items?

A. Yes. We have updated the following: Exhibit___ (IT-2) upd and Exhibit___ (IT-4) upd. We have also added a new exhibit named Exhibit __ (IT-9).

Q. Were these changes prepared under your direction and supervision?

A. Yes.

MARK FOR IDENTIFICATION AS EXHIBIT __ (IT-2) UPDATE, EXHIBIT __ (IT-4) UPDATE, AND EXHIBIT __ (IT-9)

FULL TIME EQUIVALENTS (FTE)

Q. Please explain the change to the number of full time equivalents.

A. The chart in our initial testimony (p. 27) noted that we would be increasing our headcount by 58 full time equivalents for the projects included throughout this Panel's testimony. The 58 employees were for incremental O&M only.

We have consulted with the various departments that provided the capital whitepapers included in this Panel's exhibits and have determined that the incremental FTE amount is actually 113.

Category	Requested Incremental Employees
CES IT Projects	7
Electric IT Projects	14
Foundational IT Projects	
Cybersecurity	8
Foundational IT Infrastructure	21.5
IT Platforms	47
Applications	8.5
Major Enterprise Projects	7
Total	**113**

Q. Is the revenue requirement amount changed by this correction?

A. No. The costs for these FTEs were included in the exhibits and have been included in the revenue requirement. The chart merely misstated the number of new employees already reflected in the revenue requirement.

WHITEPAPER CHANGES AND ADDITION

Q. Please explain your first whitepaper change, moving two whitepapers.

A. There are two capital white papers previously in the Gas Infrastructure, Operation and Supply Panel (GIOSP) that have been moved into this testimony.

Q. What are the capital white papers being moved from GIOP to the IT Panel?

A. The two white papers are: Gas_CONFIDENTIAL_IT_OTS SystemOTS, and Gas_IT_Outage Management System White Paper.

Q. Why have these been moved?

A. They are being moved into the IT Panel because these are Gas IT projects. These two projects should have been included in the gas portion of the IT panel in the original filing. The costs were already included in the revenue requirement. We are merely moving the whitepapers to avoid confusion since they should have been included with the IT panel initially, as other projects were.

Q. Please identify the two capital white papers being updated and describe the updates.

A. The whitepapers being updated are the TNVS Web and IT Hardware and Software Maintenance whitepapers.

Q. Where can these be found?

A. The updated TNVS Web white paper may be found in Exhibit __ (IT-4)upd and the updated IT Hardware and

Software Maintenance white paper may be found in Exhibit __ (IT-2) upd.

Q. Please explain what has been updated for these two whitepapers.

A. The Company is updating the TNVS Web white paper included in Exhibit __ (IT-4) to provide more complete information on the scope and justification for the project. For the IT Hardware and Software Maintenance white paper, we have updated the cash flow so that it matches the updated capital model.

Q. Please explain two whitepapers you are adding.

A. The whitepapers are entitaled Central Operations IT Support and NEW_Gas_IT_Risk Model Software White Paper (CapEx).

Q. Please explain the Central Operation IT Support Project.

A. This request includes four FTEs and additional accounts payable costs for outside resources.

Q. Why are you requesting additional support for Central Operations?

A. Central Operations IT's needs have increased in recent years. In 2021, we launched 65 projects. In 2022, we plan to launch another eight new projects as well as work on in-flight) projects. We have similar expectations in 2023 and beyond. Examples of these projects include sensor technology, mobility applications, and data analytics, all specifically for Central Operations.

These initiatives require IT support to manage and implement. The increase is from both client and IT led initiatives.

The Company reviewed the existing and planned projects and determined the resources (both internal and external) needed to support these efforts. Resource allocation was determined by using an estimator tool for the project efforts. Specifically, this request supports the critical Rapid Restore and Outage Scheduling applications, Operation Technology Network (OTN) project initiatives, Maximo system support, and Central Operations Initiative Lead (COIL) initiatives.

Q. What is the total requested O&M investment for the four FTEs?

A. The total O&M request for 2023-2025 is $6 million: $2 million annually in each of RY1 through RY3.

Q. What work will these resources be performing?

A. Work includes support for technical obsolescence upgrades for the Central Operations portfolio including insourced applications and client managed applications, as well as meeting the demands for business-as-usual work for applications in the portfolio.

Q. Please explain the second whitepaper.

A. The GIOSP initial testimony (p. 39) noted the potential for a new project. The NEW_Gas_IT_Risk Model Software White Paper (CapEx) includes information for this project that has been determined to be necessary.

Q. Please explain this project.

A. The vendor support for our current MRP risk modeling software is being discontinued as of March 2023. The Company plans to replace the current software. The

Company projects to spend $750,000 in each of RY1 through RY3 for this replacement.

Q. Does this conclude the Panel's update and correction testimony?

A. Yes, it does.

Information Technology
2022

1. Project / Program Summary

Type: ☒ Project ☐ Program	**Category: ☒ Capital ☒ O&M**
Work Plan Category: ☐ Regulatory Mandated ☒ Operationally Required ☐ Strategic	
Project/Program Title: IT Hardware and Software Maintenance	
Project/Program Manager: Allisyn Glasser	**Project/Program Number (Level 1):**
Status: ☐ Initiation ☒ Planning ☐ Execution ☐ On-going ☐ ☐ Other: _____	
Estimated Start Date: 01/2022	**Estimated Date In Service: 12/2026**
A. Total Funding Request ($000) **Capital:** **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: $240,511,000** **Capital: $30,141,100**	**D. Investment Payback Period:** **(Years/months) (If applicable)**

Work Description:

The Company makes many technology investments each year for the continued operation of the computing and network infrastructure used to support data centers, applications, and networks. In addition, over the past few years, the Company is increasingly relying on cloud services to play a large part in our IT strategy. Whether for cost savings, process efficiencies, speed to market, redundancy, or resiliency, the cloud provides expanding capabilities that the Companies would like to leverage more. In either case, the Company protects the investments through maintenance and support contracts, managed services or subscription contracts for the hardware, software or cloud services.

Maintenance and Support Contracts
Maintenance and support contracts allow the Company to keep the hardware and software up to date, patch cybersecurity vulnerabilities, replace hardware failures, and take advantage of new release features within the products. This allows sustainability and supportability of the environment over time and increases reliability and availability of the network, business applications and infrastructure. Technology solutions can be purchased through capital investments which include a negotiated maintenance period. Once that period has expired, the contract becomes an expense to the Company, in addition newer solutions may only offer a cloud model. During the following five years, maintenance on the following products will expire and new expenses for maintenance will begin:

- Increases in PC hardware maintenance due to growth of inventory;
- Cisco network equipment and servers due to network growth;
- Microsoft Enterprise Agreement to maintain server, operating system, integration, and database software versions as well as support;
- Server backup solution;

- Data center colocation;
- Virtual Private Network technology upgrade and device mobility growth;
- Server and storage infrastructure growth.

Managed Services
In order for the Company to maintain reliable on-premise corporate data centers, the Company is partnering with a Managed Service Provider 'MSP' to maintain the data centers and provide emergency coverage across all data centers. The MSP is responsible to perform all inspections, preventative maintenance, work with vendors to perform repairs to any data center equipment (power, HVAC, batteries, cabling, etc.) and provide onsite coverage for data center emergencies. The corporate data centers host critical IT systems and expanding the MSP support across all of the data centers will ensure reliable data center operations.

Subscription Contracts
For cloud services these subscriptions fund various foundational tools and innovative projects. Microsoft Azure is our primary cloud for various services including our data and analytics platform, private cloud (Infrastructure as a Service (IaaS)) to extend our data center footprint, and Microsoft 365. These services provide scalable solutions which are designed to be provisioned quickly. The Microsoft services were a major investment and have provided improved security, collaboration experience, the ability to deploy applications in days and provides improved productivity and disaster recovery since the applications are accessible from anywhere. In addition, Microsoft Office 365 is the current corporate standard for desktop productivity and security tools software. Key benefits and functionality of the platform include:

- Seamless integration with the programs we already know and use, including Outlook, Word, Excel, OneNote, and PowerPoint;
- Web-enabled access to email, important documents, contacts, and calendar on any device—including PCs, iPhones, Android phones;
- Collaboration and online meeting solutions by using Teams and SharePoint online which have been essential for remote work and external communications;
- Improved security tools to help protect email, documents, and networks;
- Reliability, availability, and performance, with a 99.9% financially backed uptime guarantee

Justification Summary:
The value of the Company's technology investments is maintained through support and subscription contracts for its various hardware and software platforms and cloud services. The agreements are used to provide access to platforms, assist during issues, keep the software up to date, patch cybersecurity vulnerabilities, replace hardware failures, and take advantage of new release features within the products. IT provides critical services, and these contracts reduce risk and allow for the sustainability and supportability of the environment and increases reliability and availability of the network, business applications, infrastructure, and PCs. Without having these contracts in place, the Company will incur a significant risk.

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

This program supports future growth, allows for security and support for all applications, networks and major IT initiatives.

2. Supplemental Information

Alternatives

Alternative 1 description and reason for rejection
Do Nothing. See below.

Alternative 2 description and reason for rejection

Alternative 3 description and reason for rejection

Risk of No Action

Risk 1

Failure to maintain these contracts will introduce significant risk to the availability of the technology solution and the business functions it provides. It also introduces a cybersecurity risk and compromise the capability to interact with external stakeholders.

Risk 2

Risk 3

Non-Financial Benefits

- Increased safety, reliability, efficiency, or customer satisfaction
- Improved processes, workflows and communication among departments

Summary of Financial Benefits and Costs (attach backup)

1. Cost-benefit analysis (if required)

There are 3 main drivers of the costs.

- Increase in investments in hardware and software result in an increase in maintenance and support agreements. Maintenance typically runs 20% per year on the original investment.
- Expansion of cloud services including M365. In addition, we can capitalize a portion of M365 services which equates to the $30.14M capital request.
- Data center investments including managed services and collocation.

2022 - 2026 Budget Significant Variations Rate Case Items $Millions	2022 vs. 2021 CECONY	2023 vs. 2022 CECONY	2024 vs. 2023 CECONY	2025 vs. 2024 CECONY	2026 vs. 2025 CECONY
	$24.8	$44.1	$48.2	$49.1	$49.7
	$21.2	$24.8	$44.1	$48.2	$49.1
Variance	$3.6	$19.3	$4.1	$0.9	$0.6
PROVIDE COMPUTER HARDWARE MAINTENANCE	$2.9	$12.8	$1.5	$0.5	$0.4
Data Center Operations	1.4	9.4	0.0	0.0	0.0
Storage Arrays	0.3	1.4	0.4	0.0	-0.6
Equinix Datacenter Colocation	0.7	1.2	0.5	0.5	0.5
Nutanix Datacenter HW	0.7	0.5	0.3	0.0	0.0
UPS/PDU Datacenter PM	0.5	0.0	0.0	0.0	0.5
Other	0.0	0.3	0.3	0.0	0.0
CISCO SmartNet	-0.7	0.0	0.0	0.0	0.0
PROVIDE COMPUTER SOFTWARE MAINTENANCE STANDARD	$0.7	$4.5	$2.3	$0.2	$0.2
Cloud Computing	1.1	3.2	2.0	0.0	0.0
Miscellaneous Increases/(Decreases)	-0.4	1.3	0.3	0.2	0.2
		1.0	0.0	0.0	0.0
Labor		1.0	0.3	0.2	0.0
Total Variance	$3.6	$19.3	$4.1	$0.9	$0.6

2. Major financial benefits
None

3. Total cost
$270,652,100

4. Basis for estimate
The basis for the estimate consists of current spend with anticipated growth for major enterprise initiatives.

5. Conclusion

These types of agreements are required for the supportability, security, and reliability of all our applications and infrastructures.

Project Risks and Mitigation Plan

Risk 1 — Mitigation plan
NA

Risk 2 — Mitigation plan

Technical Evaluation / Analysis

IT performs planning and analysis on all technologies introduced. Solutions are investigated in conjunction with the IT strategy and vision planning process. Interaction with IT advisors, vendors and Company employees select optimal solutions. Each implementation is done with technology evaluations and commercial RFPs before selection and rollout.
Project Relationships (if applicable) This program impacts all applications and initiatives.

3. Funding Detail

Historical Spend

	Actual 2017	Actual 2018	Actual 2019	Actual 2020	Historic Year (O&M only)	Actual 2021
Capital						
O&M	12,627,000	13,352,000	17,024,000	20,562,000	19,207,000	21,158,000

Total Request ($000):

Total Request by Year:

	Request 2022	Request 2023	Request 2024	Request 2025	Request 2026
Capital			29,845,000		
O&M*	24,837,000	44,084,000	48,274,000	49,158,000	49,700,000

Capital Request by Elements of Expense:

EOE	2022	2023	2024	2025	2026
Labor					
M&S					
Contract Services			29,845,000		
Other					
Overheads					
Total					

Total Gross Cost Savings / Avoidance by Year:

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

Total Ongoing Maintenance Expense by Year:

	2022	**2023**	**2024**	**2025**	**2026**
O&M	**24,837,000**	**44,084,000**	**48,274,000**	**49,158,000**	**49,700,000**
Capital			**29,845,000**		

*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

Information Technology
2022

1. Project / Program Summary

Type: ☒ **Project** ☐ **Program**	**Category:** ☒ **Capital** ☐ **O&M**	☐ **Regulatory Asset**
Work Plan Category: ☐ **Regulatory Mandated** ☐ **Operationally Required** ☒ **Strategic**		
Project/Program Title: TNVS WEB		
Project/Program Manager: Matthew Koenig	**Project/Program Number(Level 1): 24616815**	
Status: ☐ **Initiation** ☐ **Planning** ☐ **Execution** ☒ **On-going** ☒ **Other :**		
Estimated Start Date: 1/1/2022	**Estimated Date In Service:** 12/31/2022	
A. Total Funding Request ($000) **Capital:** 2,490.0 **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:

Ongoing expansion and enhancement of the TNVS web-based solution. This will allow reach to multiple device platforms with reduced long-term deployment and maintenance costs. Updates include additional displays with maps and diagrams designed to enhance situational awareness for a variety of users and purposes. A separate line of expansion will be established for the Dark Sky scenario which envisions the catastrophic loss of SCADA and corporate intranet. Under these conditions, alternate sources of information (both automated and manual via smart phones) are communicated across alternate communication routes to a cloud-based server, which will then provide the information to dedicated "safe" laptops (running a variation of the TNVS application) via remaining internet channels. This updates the TNVS Server to the latest AVS/OpenViz codebase and contains a full UX update.

Justification Summary:

The older version of TNVS exists on a hardware server that had become obsolete and has been be replaced. This project seeks to upgrade the application with enhanced features and extended information along with ongoing appropriate updates in operating system, software, data and browser capabilities. In addition, the application will be tailored to support the "Dark Sky" scenario to enable significant situational awareness for System Operators following catastrophic loss of normal operating conditions.

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

The program is designed to support operators and engineers in the field with enhanced situational awareness of the state of the transmission system. By implementing in a browser-based environment, the application provides a significant improvement in resiliency.

Future expansion of this application will provide additional resiliency in the form of increased awareness during emergencies and impacting events such as loss of the ECC mimic board, or other equipment outages due to natural events or other causes.

Incorporation of additional information resources from the Relay Protection area, combined with alternative communication channels will enable an alternate platform providing enhanced situational awareness through the rapid collection of information following "Dark Sky" or other catastrophic events impacting the Energy Control Center's nominal computer equipment.

The new application mitigates security risks through implementation of the new platform and environment.

Risk 1 Loss of a Major or Sole Supplier	Risk 1 Description: Reduce impact from loss of bulk power mimic board

2. Supplemental Information

Alternatives:

Establish additional redundant systems beyond current back-up levels.

Rejection Reason: Significant expense for all equipment associated with data collection, dedicated communication channels and computer resources.

Risk of No Action:

Under normal conditions, the lack of available information outside of the Energy Control Center will create additional work delays and distractions for System operations as they look to respond to status inquiries from field forces and engineers who need that information to perform their work.

Under Dark Sky conditions, the lack of situational awareness will lead to delays and operating errors as system operators struggle to obtain information manually through slow-acting and less reliable resources (phone, texting, radio, etc.), The lack of comprehensive maps and tables would further delay the decision making process, while operators work to coordinate and organize significant amounts of information.

Non-financial Benefits:

Under normal conditions, critical transmission information available to operators, engineers, executives while offsite.

During a dark sky event, critical transmission information available to operators following a catastrophic failure of the nominal control functions.

Summary of Financial Benefits and Costs (attach backup)

1. Cost-benefit analysis (if required)

2. Major financial benefits

N/A

3. Total Cost ($000)

All Previous Actuals (378.3) + Cur. Yr. Sanctioned Forecast (135.0) + Next 5 Years Est. (2,490.0) = Total Cost (3,003.3)

4. Basis for estimate

Application Development on multiple platforms, establish alternative communications channels, New set of informational diagrams covering data obtained from the entire Transmission and Subtransmission systems, along with high level info from Area Stations.

Vendor estimates for time and effort

5. Conclusion

Project Risks and Mitigation Plan

Risk	Mitigation Plan

Technical Evaluation/ Analysis

Project Relationships (if applicable)

3. Funding Details

Historical Spend by Year ($000):

	Actuals 2017	Actuals 2018	Actuals 2019	Actuals 2020	Historic Year** (O&M only)	Forecast 2021
Capital				378.3		135.0
Implementation O&M*						
Regulatory Asset						

* * For Rate Case only

Total Request ($000):

Total Request by Year ($000):

	Request 2022	Request 2023	Request 2024	Request 2025	Request 2026
Capital	490.0	500.0	500.0	500.0	500.0
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 2022	Request 2023	Request 2024	Request 2025	Request 2026
Labor					
M&S					
A/P	0.0	500.0	500.0	500.0	500.0
Other	490.0				
Overheads					
Total	**490.0**	**500.0**	**500.0**	**500.0**	**500.0**

Total Gross Cost Savings / Avoidance by Year:

	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 2022	Request 2023	Request 2024	Request 2025	Request 2026
O&M	0.0	0.0	0.0	0.0	0.0
Capital	0.0	0.0	0.0	0.0	0.0

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)

Gas Operations
2022

1. Project / Program Summary

Type: ☒ Project ☐ Program	**Category: ☒ Capital ☐ O&M ☐ Regulatory Asset**
Work Plan Category: ☐ Regulatory Mandated ☒ Operationally Required ☐ Strategic	
Project/Program Title: Gas Control Operator Training System (OTS) Simulator	
Project/Program Manager: Nariman Nasseri	**Project/Program Number (Level 1): 24660949**
Status: ☐ Initiation ☒ Planning ☐ Execution ☐ On-going ☐ ☐ Other: _____	
Estimated Start Date: 2023	**Estimated Date In Service: 2024**
A. Total Funding Request ($000) **Capital: $1,500** **O&M: $180**	**B.** **☐ 5-Year Gross Cost Savings ($000)** **☐ 5-Year Gross Cost Avoidance ($000)** **O&M:** **Capital:**
C. 5-Year Ongoing Maintenance Expense ($913,000) **O&M: $913,000** **Capital:**	**D. Investment Payback Period: (Years/months) (If applicable)**

Work Description:

This project is for the design, configuration, internal testing, site installation and verification, and documentation and deployment of an Operator Trainer System (OTS) simulator of the Con Edison Gas Transmission System for Gas Control Gas System Operator Training and continued resource support to maintain simulator model (Simulator Engineer).

Configuration of the model and logic includes approximately 40 gas regulator stations, 90 deliveries, 50 Remote Operated Valve (ROV) sites, seven City Gates, two Interconnects, and a compressor station. Logic to be developed/included for regulator function, compressor start-up and shutdown, valve control, and gate station action.

Solution to include scenario development in line with Control Room Management and Team Training requirements on normal operations, single and cascading Abnormal Operating Condition situations, and ability for scoring/recordkeeping for Control Room Management Compliance Purposes.

Human-Machine Interface/Displays to be developed consistent with the existing Gas Operations Supervisory System (GOSS) application for true-to-life system replication.

All necessary software/licenses/hardware for solution as well as technical assistance to be included as part of project.

Hardware Purchase, System Staging and Software Installatoin, and Model/Logic configuration are projected for 2023, with Supervisory Control And Data Acquisition Interface/Integration, Scenario Development, Site Installation and User Acceptance Testing projected for 2024, with total project length anticipated at 16 months.

Justification Summary:

With the implementation of Team Training as part of Control Room Management, additional emphasis continues to be placed by PHMSA on an Operator's training program for their system controllers for both normal operations as well as correct reactions under abnormal operating conditions. Quick, effective response to an abnormal operating condition can be the difference between public safety and tragedy. The Gas System OTS software suite and support personnel would provide the Company's Gas System Operators a real-life, mistake tolerant environment to develop initial skills for new personnel, test existing personnel on speed of response on a variety of tailorable operating scenarios, and allow for system experience ahead of proposed significant piping changes on the Gas Transmission System.

Additionally, training requirements and efficiency will continue to be a priority, as existing personnel retain a significant amount of operating experience. The current training program utilizes extensive on-the-job shadowing of existing controllers for knowledge transfer, and is opportunistic in exposing new controllers to the wide variety of situations faced on a day to day basis; additionally, differences in seasonal operations may result in operators being exposed to real life operations for the first time even after qualification.

Implementation of an OTS solution would better prepare new controllers utilizing similar and past event scenarios in a sandbox environment, mitigate potential distractions to existing controllers during the On-the-job shadowing process due to additional distractions and responsibilities by minimizing required shadowing time, better track and train existing operators on situations they may be unfamiliar with, and expose controllers to new system configurations and equipment prior to turn-on in the field.

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

Implementation of this OTS Solution reduces risk associated with Gas Control Operations by providing an error-tolerant space for training purposes. Gas Transmission construction projects addressing climate adaptation activity and mitigation can be integrated into this solution prior to asset turn-on, increasing reliability and abnormal operating condition training on new systems.

2. Supplemental Information

Alternatives

Alternative 1 description and reason for rejection

Continued usage of existing Control Room Management training program. Due to evolving training requirements, higher regulatory expectations, and need for continuous improvement in operator training, lack of an OTS simulator will continue to stunt training program growth and expose additional risk to Gas Control Operations.

Risk of No Action

Risk 1
Inexperience/unfamiliarity of normal operations/abnormal operating conditions leading to Controller Error resulting in potential damage to life and property and degradation of corporate image/brand.

Risk 2
Increased cost and training time required for new controllers to be able to perform the functions of Associate Gas System Operator, Gas System Operator, or Senior Gas System Operator, increasing workload on existing qualified team until new team member can be qualified, increasing hours worked, fatigue, and distractions during the training process. This risk will continue to increase as additional controllers retire/leave with significant operating experience in the Gas Control Center.

Risk 3
Compliance risks as Control Room Management training requirements evolve, as additional resources/systems will be required to track Gas Control specific training and skill validation.

Non-Financial Benefits

Increased performance and reduction in potential operating errors as the Gas Transmission System continues to evolve. Additional opportunities across the Gas Engineering to validate/test new system configurations to ensure consistent operations across the organization. Increased safety/reliability (including incorporation of Gas Transmission climate adaptation projects) by real-time training on normal and abnormal operating conditions prior to asset energization and in-service status.

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

2. Major financial benefits

3. Total cost

The total capital cost is $1,500,000. Climate change mitigation and/or adaptation is not anticipated to impact project cost.

4. Basis for estimate

The funding for this project was determined based on software and license budgetary estimate/quote, anticipated hardware requirements, and continued resource support.

5. Conclusion

OTS Simulation software leverages technology as a necessary evolution in Gas Controller training and in-line with accepted industry practices across the energy sector. By exposing Gas Controllers to normal and abnormal operations in a sandbox environment, learning is done in a risk free space to the public, environment, and company.

Project Risks and Mitigation Plan

Risk 1 Datacenter readiness for equipment installation. Mitigation plan Identify temporary location for equipment installation and to implement without hardware redundancy.
Technical Evaluation / Analysis
Project Relationships (if applicable)

3. Funding Detail

Historical Spend

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

Total Request ($2,706,000):

Total Request by Year:

	Request 2022	**Request 2023**	**Request 2024**	**Request 2025**	**Request 2026**
Capital		**$1,100**	**$400**		
O&M*			**$60**	**$60**	**$60**
Regulatory Asset					

Capital/Regulatory Asset Request by Elements of Expense:

EOE	**2022**	**2023**	**2024**	**2025**	**2026**
Labor					
M&S		**$1,100**	**$400**		
Contract Services					
Other					

Overheads					
Total					

Total Gross Cost Savings / Avoidance by Year:

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

Total Ongoing Maintenance Expense by Year:

	2022	**2023**	**2024**	**2025**	**2026**
O&M			**$60**	**$60**	**$60**
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

Gas Operations
2022

1. Project / Program Summary

Type: ☒ Project ☐ Program	**Category: ☒ Capital ☐ O&M**
Work Plan Category: ☐ Regulatory Mandated ☐ Operationally Required ☒ Strategic	
Project/Program Title: Gas Outage Management System (OMS)	
Project/Program Manager: Oscar Leon	**Project/Program Number (Level 1): 25776254**
Status: ☒ Initiation ☐ Planning ☐ Execution ☐ On-going ☐ ☐ Other: _____	
Estimated Start Date: 2023	**Estimated Date In Service: 2024**
A. Total Funding Request ($000) **Capital: $17,835** **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:** $$1,400 **Capital:**	**D. Investment Payback Period: (Years/months) (If applicable)**

Work Description:

A Gas Outage Management System ("OMS") will provide an electronic solution to manage customer outage information in the event of a large-scale outage in order to better manage resources, decrease restoration time, and communicate in a timely manner to our customers and other stakeholders.

The key elements the system should have:

- Outage Detection: The system would be able to identify incoming "No gas" calls across a widespread area to readily (visually) determine the impacted area and initiate quicker remedial actions.

- Outage Management: After an area has been identified and the customers impacted have been determined, the system will control management of restoration information (e.g., turn-offs, turn-ons, inactive meters, etc.) of each customer, zone or region. Field information will need to be recorded electronically in the field (hand-held device) by Company and Mutual Aid crews, which will be uploaded and managed accordingly to provide timely and accurate outage progress and reporting.

- Geogrphic Information System integration: A Gas OMS system should integrate outage information with the Company's new Esri based mapping system.

- Intergrate: The Gas OMS system should be able to use Advanced Metering Infrastructure ("AMI") data to identify and verify customer status. Along with integrating with additional legacy systems such as Gas Central and Customer Iinformation System ("CIS").

Additionally, The Gas Emergency Response Center ("GERC") is responsible for the management and dispatching of field crews to suspected gas leaks ("Odor Calls") within the Con Edison service territory. Odor Calls can be made from the public, as well as Con Edison field crews and contractors working for the Company. By driving insights through the use of data and analytics, the goal of this use case is to maintain and/or improve response time with current staffing levels or fewer. To achieve this, the project plans on delivering various data products including: a Gas Inspection System based historical dashboard and a forecasting model. The GIS based dashboard will provide a historical view of past leak call activity where users will be able to understand and analyze call volumes by region, compare similar days as well as see trends at a more granular geographic level. By utilizing historical data, a forecasting model will generate additional foresight that will allow the GERC to anticipate changes in call volumes to ensure adequate and appropriate staffing.

Justification Summary:

Large Scale Gas Customer Outage risk was added to the Con Edison Inc. risk profile in the fourth quarter of 2019. A future mitigation control noted within the risk profile is to pursue a review the installation of a Gas OMS system. This risk outlook is currently identified as increasing due to:

The Planning function in the gas Incident Command Structure ("ICS") requires estimated time to restoration ("ETR") in the event of an outage. Having a Gas OMS system that can electronically record and transmit outage information will provide accurate information to manage the outage and provide timely information to all stakeholders, ultimately reducing restoration time which can be critical if the outage were to occur in below freezing temperatures where customers are displaced. In addition, it would remove the manual time-consuming process which provides far less accurate information.

In recent years there have been two major industry events which resulted in large scale gas customer outages (the 2018 Columbia Gas Event in Massachusetts, and the 2019 National Grid Aquidneck Island Outage in Rhode Island), where over 7,000 gas customers lost service in each event. In the Rhode Island event, the Public Utilities Commission ("PUC") recommended that the utility "create an outage mapping and tracking process" to better identify and track gas outages mainly due to the paper-based process used during the event. National Grid staffed personnel 24/7 for seven days to process outage/restoration cards to perform outage reporting and analysis for ~7,500 customers.

A Gas OMS would also serve beneficial in handling major events with greater control and emeregecny mitigation. It will visualize the shutoff, repair, and restoration process to leverage both internal and external stakreholder communication. A Gas OMS has the potential of increasing both internal management of an incident as well as enhance customer outage communication.

Additionally, gas made safe time/leak response time are a critical performance metrics for Employee and Public Safety for Gas Operations, both internally as well as externally, from goals set with DPS Staff. GERC's management of intake and dispatch of incoming odor calls is key in meeting these performance metrics.

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

Large Scale Gas Customer Outage risk was added to the Con Edison Inc. risk profile in the fourth quarter of 2019. A future mitigation control was identified for this risk, which included this Gas OMS.

2. Supplemental Information

Alternatives

Alternative 1 description and reason for rejection

The Company could keep the current manual process. This was rejected based on the current regulatory environment and customer expectations to be restored in the shortest amount of time.

Alternative 2 description and reason for rejection

Alternative 3 description and reason for rejection

Risk of No Action

Risk 1
Health and Safety – catastrophic/significant impact to employee and public safety.
Performing restoration manually could extend restoration outage time which would be exacerbated if the outage occurred in the winter with sub-freezing temperatures jeopardizing employee and public safety.

Risk 2
Financial & Operational - catastrophic/significant damage to customer property, inter-utility damage and outages, loss of franchise, fines, penalties, lawsuits, lost revenue, and extensive restoration and restitution fees

Risk 3
Reputational – impacts to brand and public perception, loss of investor and regulator confidence

Non-Financial Benefits

- Improved safety and reliability
- Improved operational effectiveness
- Improved workflows and communications (within the Company and with regulators, customers, and first responders)

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

2. Major financial benefits
n/a

3. Total cost

The total cost estimate is $17,835,000. Climate risk adaptation measures have added an estimated $2,000,000 included to the proposed project costs.

4. Basis for estimate
Estimates are based on prices from current contracts for similar systems. Gas OMS is a new technology category and so estimate is based on other similar types of projects.

5. Conclusion

Project Risks and Mitigation Plan

Risk 1 Mitigation plan
Gas OMS is a new technology category therefore it is not commonly used in the industry. Mitigation will be multi-stepped.

- Leverage the Company's knowledge from its electric outage management system, and gas mobile dispatch system used over the last 15 years
- Seek a solution compatible with the Company's current Electric OMS system.
- Benchmark industry groups such as Northeast Gas Association (NGA) and other utilities to understand and participate in the scope of needs in this space.
- Use performance-based contracting where possible.

Risk 2 Mitigation plan
Large outages are not common so unfamiliarity with system could be an issue for users initially and over time if the system is not used often. This risk can be mitigated by using the system during normal business (smaller outages) and conducting regular and outline mandated training/drills in the Gas Emergency Response Plan.

Technical Evaluation / Analysis
N/A

Project Relationships (if applicable)
Collection of field data electronically via Gas Central Mobile and upload to a Gas OMS system would be required. (e.g., Gas Mobile Phone/tablet app to record meter number and status (e.g., off and locked, or turned on, currently locked/inactive))

Using AMI gas meter data to assist in determining field status could be beneficial.

ESRI Mapping System

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	0
O&M	0	0	0	0	0	0

Total Request ($000):

Total Request by Year:

	Request 2022	**Request 2023**	**Request 2024**	**Request 2025**	**Request 2026**
Capital	0	$9,036	$8,799	$	0
O&M*	0	0	0	0	0

Capital Request by Elements of Expense:

EOE	**2022**	**2023**	**2024**	**2025**	**2026**
Labor		$2,494	$2,667		
M&S		$420			
Contract Services					
Other		$4,666	$4,616		
Overheads		$1,456	$1,516		
Total		$9,036	$8,799		

Total Gross Cost Savings / Avoidance by Year:

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

Total Ongoing Maintenance Expense by Year:

	2022	**2023**	**2024**	**2025**	**2026**
O&M				**$140**	$140
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

Gas Operations
2022

1. Project / Program Summary

Type: ☒ Project ☐ Program	**Category: ☒ Capital ☒ O&M ☐ Regulatory Asset**
Work Plan Category: ☐ Regulatory Mandated ☐ Operationally Required ☒ Strategic	
Project/Program Title: Asset Risk Management Software	
Project/Program Manager: Molly Cifelli	**Project/Program Number (Level 1): 22501737**
Status: ☐ Initiation ☒ Planning ☐ Execution ☐ On-going ☐ ☐ Other: _____	
Estimated Start Date: January, 2023	**Estimated Date In Service: December, 2023**
A. Total Funding Request ($000) **Capital: $3,000** **O&M:**	**B.** **☐ 5-Year Gross Cost Savings ($000)** **☐ 5-Year Gross Cost Avoidance ($000)** **O&M:** **Capital:**
C. 5-Year Ongoing Maintenance Expense ($000) **O&M: $750** **Capital:**	**D. Investment Payback Period: (Years/months) (If applicable)**

Work Description:
This project will replace the current *Optimain DS* risk modeling software used by CECONY.
The software vendor will no longer provide maintenance and support beyond March 31, 2023. The vendor has also discontinued its development of a replacement application for this software.

Under federal code, the company is required to evaluate and risk rank mains and services in the gas distribution and transmission systems. The new software will fulfill this requirement.

The software will provide risk prioritization model(s) to calculate and prioritize replacement projects by utilizing probability of failure and risk profile factors to calculate project risk. It will incorporate data from various Con Edison systems, including the new e-GIS mapping system and new Gas Central Work Order and Asset Management System. It will also incorporate publicly available data such as New York City – Department of Buildings, Westchester Geographic Information System and MTA (Metropolitan Transportation Authority) information. Additionally, the software will monitor system trends or changes to the gas distribution and transmission systems and identify emerging threats or changes to existing threats.

This software replacement will continue to enhance the Company's efforts to eliminate the riskiest facilities before they lead to a catastrophic failure, hazardous accumulation of gas, and customer outages. Various data analytics reports will also be able to be produced to assist in quantifying risk reduction in the gas systems.

Justification Summary:
Risk-based prioritization mitigates the Enterprise Risk of a Gas Distribution System Event – the second highest risk in the Gas Operations Enterprise Risk portfolio.

This upgrade is necessary to allow Gas Engineering to retire the *Optimain DS* program. *Optimain DS* utilizes an antiquated Visual Basic programming language which is no longer approved by Con Edison IT for security reasons. Accordingly, Gas Engineering must retire the *Optimain DS* software for both internal security and vendor support availability reasons.

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

Long-range plans for Gas Operations include the replacement of all leak prone distribution pipe by 2040. Prioritization of the order in which those mains are replaced will need to be flexible over the next 18 years to allow for adaption to the company's changing climate adaptation activities.

A replacement risk model program will provide the ability to produce easy-to-read risk reports to assist in these adjustments. The program will also allow the risk of flooding to be factored into the risk-prioritization algorithm.

2. Supplemental Information

Alternatives

Alternative 1 description and reason for rejection

Out of compliance with state and federal regulations.

Risk of No Action

Risk 1

The option of "no action" would require the continued use of the existing *Optimain DS* software. There are IT security issues with continuing the use of the *Optimain DS* software. Furthermore, the *Optimain DS* software will no longer be supported by the vendor after March 2023. Federal code requires the re-evaluation of threats and risk ranking on the distribution system every five years. Gas Engineering must develop an alternative strategy for the evaluation and ranking of risk before 2025 in order to remain in regulatory compliance if this project is not completed.

Non-Financial Benefits
Mitigation and prioritization of risk and threats increases public safety, reduces risk to life and property, minimizes outages, and extends the longevity of the pipeline system.

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

2. Major financial benefits
By prioritizing risk, there is an opportunity to replace assets before they fail resulting in avoided O&M and potential liability costs.

3. Total cost
The total cost of the project through this rate case will be $4,000,000. 0% of this cost can be attributed to climate change mitigation.

4. Basis for estimate
Vendor responses to a request request for budgetary information.

5. Conclusion
This project should be completed to replace software platforms that will no longer be supported or updated and to eliminate IT concerns with the existing *Optimain DS* software.

Project Risks and Mitigation Plan

Risk 1	Mitigation plan
A replacement risk model software is not implemented before November 2023.	Increase the frequency of model update from Con Edison requirement of three years to federal rule of five years.

Risk 2	Mitigation plan

Technical Evaluation / Analysis
Computer model analysis software is preferred when determining the risks related to pipeline failure. Some failure factors incorporated in the previous model include corrosion, electric structure risk, soil type and nearby subway. Some consequence factors incorporated in the previous model include building class, building proximity, population density and a volume/pressure factor. Distribution Integrity Management Program (DIMP) analytics, including the use of a computer based probabilistic risk model, are utilized to determine specific asset classes that are considered substandard.

Project Relationships (if applicable)
This project cannot be completed until the Gas Central and eGIS mapping projects are implemented.

3. Funding Detail

Historical Spend

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

Total Request ($000):

Total Request by Year:

	Budget 2022	**Request 2023**	**Request 2024**	**Request 2025**	**Request 2026**
Capital	**$250**	**$750**	**$750**	**$750**	**$750**
O&M*					**$250**

Regulatory Asset					

Capital/Regulatory Asset Request by Elements of Expense:

EOE	2022	2023	2024	2025	2026
Labor					
M&S					
Contract Services	**$250**	**$750**	**$750.**	**$750**	**$750**
Other					
Overheads					
Total	**$250**	**$750**	**$750.**	**$750**	**$750**

Total Gross Cost Savings / Avoidance by Year:

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

Total Ongoing Maintenance Expense by Year:

	2022	2023	2024	2025	2026
O&M	**0**	**0**	**0**	**0**	**0**
Capital	**0**	**0**	**0**	**0**	**0**

*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 and the retirement of the existing system.

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

Information Technology / IT Solutions Delivery
Budget Year 2022-2026

1. Project / Program Summary

Type: ☒ Project ☐ Program	**Category: ☐ Capital ☒ O&M**
Work Plan Category: ☐ Regulatory Mandated ☐ Operationally Required ☒ Strategic	
Project/Program Title: Central Operations Application Development and Support	
Project/Program Manager: Rahul Rodrigues	**Project/Program Number (Level 1):**
Status: ☐ Initiation ☐ Planning ☐ Execution ☒ On-going ☐ ☐ Other: _____	
Estimated Start Date: 1/1/2023	**Estimated Date In Service: 12/31/2026**
A. Total Funding Request ($000) **Capital:** **O&M:** $6,000	**B.** **☐ 5-Year Gross Cost Savings ($000)** **☐ 5-Year Gross Cost Avoidance ($000)** **O&M:** **Capital:**
C. 5-Year Ongoing Maintenance Expense ($000) **O&M:** $10,000 **Capital:**	**D. Investment Payback Period: (Years/months) (If applicable)**

Work Description:
IT has had unprecedented demand from Central Operations for Information Technology (IT) services for several years. While some demands are for sensors and work management, others are related to mobility and data analytics. Central Operations requests for new IT initiatives and projects requiring IT support to collaborate, work on and implement have increased over the last several years. The increase is from Client led initiatives as well as from new IT led projects. IT has also lost employees supporting Central Operations over the last year due to attrition and to moves to other areas of Con Edison. As a result, there is a need for nine full-time equivalents (FTEs) per year to work on new Central Operation initiatives, ranging from Operations Technology (OT) IT efforts to Work Management initiatives in Maximo, to Mobility related initiatives. The approximate cost for the 9 FTEs is $2M per year.

The request is for O&M to fund the 9 FTEs for the next four years.

Justification Summary:

Over the next four years (2023 – 2026), there are over 35 Central Operations projects and initiatives, both on the IT and Client led projects and initiatives, that will require IT support. In order to meet this demand a minimum of 9 FTEs is needed.

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

2. Supplemental Information

Alternatives

Alternative 1 description and reason for rejection
Work with the current limited IT support for the 35+ Central Operations projects and initiatives. This will likely result in constrained IT support capability for supporting Central Operations' new initiatives and is not recommended.

Alternative 2 description and reason for rejection

Alternative 3 description and reason for rejection

Risk of No Action

Risk 1
Constrained IT support due to insufficient resources could lead to potential delays in the Central Operation initiatives planned for 2023 – 2026, which could also result in cybersecurity risks.

Risk 2

Risk 3

Non-Financial Benefits

Funding for the 9 FTEs will result in increased customer satisfaction and reliability to support the 35+ Central Operations initiatives in 2023 – 2026.

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

2. Major financial benefits

3. Total cost

4. Basis for estimate

5. Conclusion

IT currently supports a wide portfolio of disparate WMS legacy applications. Many are running on obsolete technologies while others have reached their functional limitations and can no longer adequately support the current and growing needs of the business. Funding for the 9 FTEs will help support initiatives to address cybersecurity concerns. Cyber-attacks have increasingly targeted critical infrastructure providers. Obsolete systems lack the ability to allow the Company to leverage the latest cybersecurity tools such as advanced monitoring and alerting and multifactor access control. Supporting the replacement of these systems will allow us to help modernize cyber controls such as these. This cybersecurity risk is compounded by the dwindling number of skilled resources with the background to support the obsolete technology in the legacy applications. Due to the cybersecurity risk, it is critical to pursue funding for the 9 FTEs in the upcoming rate case.

Project Risks and Mitigation Plan

Risk 1	Mitigation plan
Risk 2	Mitigation plan

Technical Evaluation / Analysis

Project Relationships (if applicable)

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

Capital Request by Elements of Expense:

EOE	2022	2023	2024	2025	2026
Labor					
M&S					
Contract Services					
Other					
Overheads					
Total					

Total Gross Cost Savings / Avoidance by Year:

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

Total Ongoing Maintenance Expense by Year:

	2022	2023	2024	2025	2026
O&M	**2,000**	**2,005**	**2,005**	**2,005**	**2,005**
Capital					

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4. Definitions

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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